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FIRST REPORT

OF THE

Department of Agriculture

OF THE

State of Washington

TO THE

GOVERNOR

Showing Disbursements of Appropriations Beginning
June 11, 1913, and Ending September 30, 1914

Reports For Statistical Data Beginning June 11,
1913, and Ending June 30, 1914

OLYMPIA:
FRANK M. LAMBORN PUBLIC PRINTER
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LETTER OF TRANSMITTAL.

STATE OF WASHINGTON,
DEPARTMENT OF AGRICULTURE.
OLYMPIA, Nov. 1, 1914.

To His Excellency, Ernest Lister, Governor of the State of Washington:

SIR: In compliance with law, I have the honor to submit herewith the First Report of the Department of Agriculture, covering the period from June 10th, 1913, when the Department was organized, to June 30th, 1914, inclusive.

For your convenience and that of whoever shall have occasion to read it, the report contains a review of the work covered by its various divisions, and the review of each division is preceded by a general outline and summary, together with recommendations based upon the work of each.

Respectfully submitted,
H. T. GRAVES,
Acting Commissioner.

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ORGANIZATION OF DEPARTMENT.

Advisory Board.

Governor Ernest Lister, Chairman, Olympia, Wash.
E. E. Flood, Rosalia, Wash.
Dr. Granville Lowther, North Yakima, Wash.
Dr. Ira D. Cardiff, Pullman, Wash.
H. T. Graves, Acting Commissioner, Secretary, Olympia, Wash.

Department Officials.

H. T. Graves, D. V. S., Acting Commissioner, in charge of Dairy and Livestock, Olympia, Wash.
T. O. Morrison, Assistant Commissioner, Division of Horticulture, Olympia, Wash.
J. J. Higgins, Assistant Commissioner, Division of Foods, Feeds, Fertilizers, Drugs, Oils and Bakery Inspection, Olympia, Wash.

Chemists.

Prof. Elton Fulmer, Pullman, Wash.
Prof. Chas. W. Johnson, Seattle, Wash.

Bacteriologists.

Dr. E. P. Fick, Seattle, Wash.
Edith Hindman, Seattle, Wash.

Seed Analyst.

Katherine G. Stone, Olympia, Wash.

Dairy Inspectors.

A. D. Fish, Seattle, Wash.
I. J. Minnick, Spokane, Wash.
J. E. Harter, Mt. Vernon, Wash.
G. G. Carman, Chehalis, Wash.

Horticultural Inspectors.

F. E. De Sellem, North Yakima, Wash.
H. W. Samson, Everett, Wash.
Luke Powell, Prosser, Wash.
R. L. Dalton, Olympia, Wash.
J. H. Brislawn, Spokane, Wash.
F. N. Rhodes, Seattle, Wash.
Henry Huff, Sumner, Wash.
C. W. Gilbreath, Walla Walla, Wash.
I. R. Fletcher, Camas, Wash.
O. T. Clawson, Wenatchee, Wash.

Food Inspectors.

Will H. Adams, Spokane, Wash.
Miss A. B. Wimple, Olympia, Wash.

Drug Inspector.

Edward L. Jones, Spokane, Wash.

Oil Inspectors.

S. P. Wilson, Chief Inspector, Seattle, Wash.
M. B. Laucks, Seattle, Wash.
Capt. John Gray, Spokane, Wash.

Veterinary Inspector.

Dr. G. F. Overhulse, Olympia, Wash.

Office Force.

F. B. Fuller, Secretary, Olympia, Wash.
S. R. Holcomb, Weather Observer and Clerk, Olympia, Wash.
J. E. Griffin, Clerk, Olympia, Wash.
Miss Ruby Boucher, Stenographer, Olympia, Wash.

PREFACE

In submitting this First Report, it has been the endeavor of the Department to present only salient features pertaining to each division, and all recommendations as to legislation are based upon problems which have arisen and are likely to repeat themselves. Estimates for appropriations are based on past expenditures and upon recommendations for changes in the statutes.

The attention of Your Excellency is respectfully directed to the recommendation of each Division, especially to the changes in law which the growth of the state demands, and to make provision for conditions hitherto covered by the statute, but repealed by the 13th legislature undoubtedly through oversight. The report which follows will demonstrate the increased efficiency of the present Department of Agriculture, with centralized authority, over the previous system of having the Divisions located in various separated localities of the state.

As the law requires that this report be completed by November 1st, and the collection and compilation of data herein requires a considerable period of time, June 30th, 1914, has been fixed as a final date for all reports of statistical information herein embodied. The financial statement, however, closes September 30th, 1914. The financial report for the period from April 1st, 1913—the beginning of the biennium—until June 10th, 1913, when the organization of the Department occurred, is covered by an appended statement. During this period the various Divisions operated as individual departments.

INTRODUCTION

The Department of Agriculture of the State of Washington was created by chapter 60 of the Session Laws of 1913, which passed Senate Bill 247, entitled "An act creating a Department of Agriculture, providing for the organization and administration thereof, defining the powers and duties of its officers and employes in relation to agriculture, horticulture, livestock, dairying, state fairs, foods, drinks, drugs, oils, and other kindred subjects, providing penalties for the violation thereof and repealing certain acts and parts of acts."

Owing to the fact that the law carried no emergency clause, it did not become effective until the expiration of the regular ninety-day limit after the adjournment of the legislature, during which time the departments it amalgamated operated individually under their respective statutes.

The act charges the Commissioner with all the powers and duties formerly vested in the State Veterinarian, Dairy and Food Commissioner, Commissioner of Horticulture, State Oil Inspector, Bakery Inspector, State Fair Commission, in the Washington State College with respect to the licensing and registration of Jacks and Stallions, and the director of the Washington Agricultural Experiment Station with respect to concentrated commercial feeding stuffs and commercial fertilizers used for manurial purposes.

For purposes of administration the work of the Department has been divided into four divisions, viz.: Dairy and Livestock Division; Division of Horticulture; Division of Foods, Feeds, Fertilizers, Drugs, Oils and Bakery Inspection; and the Division of Agriculture, following as closely as possible the line of demarcation made by the individual appropriations.

The commissioner is empowered to publish and distribute bulletins pertaining to the Department, and to cause surveys and classifications to be made of such lands as may come within any project of the state for reclamation, drainage or utilization of logged-off lands.

No special appropriation was made for the enforcement of the entire act, but the Commissioner is authorized and empowered to expend any appropriation for any of the divisions, the powers and duties of which are vested in him, for the purpose for which the same was appropriated. Therefore as appropriations had been made for State Veterinarian, Dairy and Food Commissioner, Oil Inspector, Horticulture, and the Washington State Fair as follows:

State Veterinarian	$15,000.00
Drugs and food	46,600.00
Horticulture	75,000.00
Oil	18,800.00
State Fair	40,000.00
Total	$195,400.00

the Commissioner has been unable to discharge completely the duties placed upon him by the act, especially those relating to the features of the law for which no appropriation was made. This should not be construed, however, to mean that the Department has been inactive in the discharge of duties relating to these particular features, for, from time to time, inspectors of one division or another have been detailed to look after the enforcement of laws not specially covered in the appropriation, but which were incumbent upon the Commissioner to enforce, such as the registration of Stallions and Jacks and the enforcement of the acts relating to the Concentrated Commercial Feeding Stuffs and to Commercial Fertilizers.

The Commissioner of Agriculture is charged with the administration of the laws relating to agriculture, agricultural resources and products and a special division in the act is provided to be known as the Division of Agriculture, but the statute does not define the duties of such a division except as agriculture relates to horticulture, dairying, livestock raising and seed analysis.

The Department has been called upon at various times to make biological surveys, to investigate and offer information in the matter of soil surveys and analysis, to test grains, grasses, legumes, and vegetables and to study the possibilities of future production. Many of these requests it has been able to meet through the Division of Horticulture and Seed Analyst, but in the main they have been referred to the Experiment Stations at Pullman or Puyallup, where matters pertaining to scientific research rightfully belong.

While the Department has been and will be of great service to the agricultural interests of the state in handling questions of a practical nature, it is felt that all matters involving scientific research should be referred to the Experiment Stations for investigation, such stations being already provided for and possessing the necessary equipment. For the Department to undertake the solution of such problems would mean unnecessary expense and the duplication of work. Co-operation between the Experiment Stations and the Department has had the net result of solving many problems that could not have otherwise been successfully concluded.

HORTICULTURE.

The Division of Horticulture is charged with the enforcement of the statutes relating to it, which briefly, include the licensing of all nurserymen doing business in the state, inspecting all nursery shipments to protect the buyer against diseased stock and combating the spread of pests and horticultural plant diseases, and the inspection of horticultural products.

Besides the head of the Division whose headquarters are at Olympia, each of the ten horticultural districts of the state is provided with an inspector, whose duties are definitely prescribed by statute. They inspect all fruits offered for sale, examine orchards for pests and pre-

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cial feeding stuffs, and if the case of the state is sustained there will probably be derived from the sale of such stamps, a revenue not less than $50,000 for the biennium to come. The act as it now stands is a valuable one if upheld, as it offers to those engaged in the livestock industry a strong measure of protection against adulterated stock feeds.

COMMERCIAL FERTILIZERS USED FOR MANURIAL PURPOSES.

This Act provides for the manner of handling the sale, and the quality of commercial fertilizers.

The Department, through the food inspectors, has taken samples of the product offered for sale in the open market. A list of these together with results of analysis will appear in the report of this Division.

The protection of food products and the matter of commercial fertilizers and of commercial feeding stuffs, are of equally great importance to the public generally, to the farmer and to those engaged in the raising of livestock; therefore another inspector in this Division is strongly urged. In fact, another inspector is an absolute necessity if these features of the law are to be enforced.

BAKERY INSPECTION.

By the Act of 1913, this Division was placed under the Department of Agriculture and while no appropriation was made by the Act for the enforcement of the laws relating to Bakery Inspection, by reason of the money saved in increasing the efficiency of the Department, it has been possible to maintain a complete system of bakery inspection, the report for which is herein embodied and to which attention is directed.

OIL INSPECTION.

Attention is directed to the report of the State Oil Inspector, the showing of which, over comparative periods of former years, is especially gratifying. Whenever and wherever oils are offered for sale it is the duty of the inspector to make the tests prescribed by statute to ascertain if the quality of the product offered for sale is up to the requirements. For this an inspection fee is charged, being prescribed and regulated by the law. The fees collected have surpassed those of any like previous period which is sufficient evidence of the completeness of the system.

SEED INSPECTION.

The branch of seed inspection is to the farmer one of the most important in the category of the state's inspection service, because upon it rests his guarantee of pure seeds. Not alone does the analysis and test for the purity of seeds protect him from getting a smaller crop than he is entitled to expect, but the presence of noxious weed seeds can be ascertained before planting, thus protecting the farmer against the incident troubles that follow in their wake.

A comparison of the tabulated results of certain analytical tests of seeds will indicate the character and nature of seeds offered for sale and the results obtained from seed inspections.

The Department will receive samples of agricultural seeds, from any farmer, seed dealer or other person wishing an analysis, free of charge. Whenever the seed is believed to be of an inferior quality it should first be submitted to the Department for analysis, before the farmer attempts any planting at all.

SUMMARY.

In preparing this first report of the Department of Agriculture, the task presented itself of embodying in one brief account the annual or biennial statements of eight different divisions, formerly located in as many different parts of the state. Much that has been reported in former years has been here omitted, owing to the lack of space and because it was not considered absolutely necessary.

The past year has demonstrated two things that stand out in bold relief above all others: First, that the consolidation of these eight different divisions, with police and inspection powers, under one head, was an act of wisdom; and second, that the statutes under which the integral divisions formerly operated, need a great deal of remodeling to make them perfectly applicable to a consolidated Department, capable of rendering the public the modern service it is entitled to receive.

The wisdom of the consolidation is shown in the increased efficiency of the Department, in the increased number of inspections and condemnations, in the operation of Divisions deprived of Legislative appropriation, in the ability to open new fields and prosecute work hitherto unattempted, in the elasticity of the Department to throw all its forces against a single problem and cope with it expeditiously, and finally in the establishment of a centralized bureau where the public can look for redress and relief on all subjects that are akin to each other, without any evasion of responsibility.

The necessity not of more legislation but of more adequate legislation is shown by the number of prosecutions attempted under existing statutes and which failed because such necessary elements as penalty sections were lacking; by the burdens imposed upon the Department to carry out provisions of statutes already repealed and which had formerly guaranteed a measure of protection to the public; by the increased demands placed upon the Department by the growth of the state and modern progress; and finally, by being compelled to expand itself and its finances over the work which counties formerly performed.

That the public was entitled to expect an increased efficiency from such a consolidation, goes without saying. How well the Department has lived up to expectations can be seen by a careful perusal of this report and a careful comparison with the reports of the separately operated Divisions in former years.

Examination will show many cases where the public has received timely and invaluable service made possible by the consolidation. It will show protection and saving to the patrons of the Department, otherwise impossible, and a vastly increased work performed under the appropriation, at a great saving to the state.

The wisdom of providing an advisory board to the commissioner has been demonstrated time and again during the past 18 months. At almost no expense to the taxpayers of the state, the department has had at its command in working out perplexing problems, the expert opinion, researches and studies of its board members, which upon other like departments elsewhere entails a considerable appropriation. The attendance at all board meetings has been as perfect as that of salaried members, and the concrete opinions of such a board, based upon scientific and practical experience has proven of inestimable value.

When one sums up the work of the Department since its creation it must be borne in mind that there is perhaps no other branch of state government that covers so wide a range, or embraces so many different features. It must also be remembered that its field of usefulness is open to more possibilities and demands than almost any other, and that to meet them and make, as it has done, a reputable centralized bureau, patterned as near after the Federal Department as our limited statutory authority will permit, has been no small task.

Respectfully,
H. T. GRAVES,
Acting Commissioner of Agriculture.

STALLION AND JACK REGISTRATION

Previous to the creation of the Department of Agriculture, the statutes relating to the registration of Stallions and Jacks were carried out by the Department of Animal Husbandry of the Washington State College at Pullman. This Department was authorized to disburse moneys collected from registrations in the enforcement of the law. Since the responsibility for carrying out the provisions of this act has been transferred to the Department of Agriculture, nine hundred and thirty ($930.00) dollars have been collected, all of which has been deposited with the State Treasurer. It is recommended that a special provision be made for the carrying out of this feature of the Department.

The following is a list of the Stallion and Jack registrations:

STALLIONS CLASSIFIED BY BREEDS.

BREED	Number	Per cent. of total
Percheron	318	28.45
Belgian	100	8.94
Shire	94	8.41
Clydesdale	13	1.16
French Draft	31	2.27
French Coach	6	.54
German Coach	16	1.43
Hackney	3	.27
Suffolk Punch	3	.27
Grade	534	47.76
Total	1,118	100.

JACKS.

	Number	Per cent. of total
Purebred	18	17.82
Grade	83	82.18
Total	101	100.

UNSOUNDNESS.

Since the last report it has been necessary to refuse a license in only four cases:

Sidebone	1	Bog spavin	1
Bone spavin	1	Ridgelings	1

CLASSIFICATION BY COUNTIES.

COUNTY	STALLIONS										JACKS		TOTALS			No. delinquent........
	Percheron.......	Belgian..........	Shire............	Clydesdale......	French Draft...	French Coach...	German Coach.	Hackney........	Suffolk..........	Grade stallions.	Purebred Jacks.	Grade Jacks....	Total purebred.	Total grade....	Grand total....	
Adams	15	3	1	....	3	....	....	....	....	23	1	5	23	28	51	6
Asotin	5	1	....	....	2	....	....	....	....	7	....	1	8	8	16	10
Benton	6	2	1	....	....	....	....	....	....	6	....	1	9	7	16	2
Chehalis	3	1	....	....	....	....	....	....	....	2	....	....	4	2	6	1
Chelan	1	....	....	....	....	....	....	1	....	16	2	....	4	16	20	8
Clallam	2	....	....	1	....	....	....	....	....	4	....	....	3	4	7	2
Clarke	8	2	....	....	....	....	5	....	....	13	1	....	16	13	29	8
Columbia	8	5	1	....	....	1	....	....	....	10	1	4	16	14	30	9
Cowlitz	2	1	1	....	....	....	....	....	....	2	....	....	4	2	6	....
Douglas	9	4	9	....	1	....	1	1	....	54	1	13	26	67	93	14
Ferry	2	1	....	....	2	....	....	....	....	16	....	2	5	18	23	1
Franklin	5	1	1	....	....	....	....	....	....	1	1	1	8	2	10	2
Garfield	5	1	1	....	....	....	....	....	....	6	1	1	8	7	15	1
Grant	22	6	....	....	1	....	....	....	....	43	1	5	30	48	78	21
Island	2	....	....	1	....	....	....	....	....	1	....	....	3	1	4	2
Jefferson	....	....	....	....	....	....	....	....	....	2	....	....	....	2	2	1
King	3	....	....	....	....	....	....	....	....	3	....	....	3	3	6	1
Kitsap	1	....	....	....	1	....	....	....	....	....	....	....	2	....	2	....
Kittitas	13	2	1	1	3	....	....	....	....	11	....	....	20	11	31	2
Klickitat	6	4	1	2	1	....	1	....	....	15	....	1	15	16	31	11
Lewis	7	7	2	....	2	....	1	....	1	8	2	1	22	9	31	10
Lincoln	42	13	12	....	3	....	1	1	....	57	2	16	74	73	147	56
Mason	2	....	....	....	....	....	....	....	....	....	....	....	2	....	2	....
Okanogan	14	1	4	2	1	2	....	....	....	44	....	8	24	52	76	7
Pacific	2	2	....	....	....	....	....	....	1	3	....	....	5	3	8	5
Pend Oreille	4	1	....	....	....	....	....	....	....	3	....	1	5	4	9	2
Pierce	1	1	....	....	1	....	....	....	....	2	....	....	3	2	5	1
San Juan	....	1	....	....	1	....	....	....	....	9	....	....	2	9	11	2
Skagit	4	3	....	....	....	....	....	....	....	4	....	....	7	4	11	1
Skamania	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Snohomish	6	....	....	....	1	....	....	....	....	11	....	....	7	11	18	5
Spokane	19	7	7	....	2	....	....	....	....	11	....	5	35	16	51	18
Stevens	7	....	....	....	....	....	1	....	....	24	....	2	8	26	34	3
Thurston	6	1	1	....	1	1	2	....	....	6	....	....	12	6	18	4
Wahkiakum	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Walla Walla	8	3	4	....	....	....	....	....	....	15	1	2	16	17	33	11
Whatcom	5	5	....	....	1	....	....	....	....	4	....	....	11	4	15	4
Whitman	45	16	40	4	4	....	2	....	....	81	2	11	113	92	205	66
Yakima	24	2	4	2	....	2	....	....	1	11	1	3	36	14	50	10
Other states	4	3	3	....	....	....	2	....	....	6	1	....	13	6	19	5
Totals.......	318	100	94	13	31	6	16	3	3	534	18	83	602	617	1,219	312

Total number purebred stallions..	584	
Total number purebred jacks..	18	602
Total number grade stallions..	534	
Total number grade jacks..	88	617
Total stallions and jacks..	....	1,219
Total stallions	1,118	
Total jacks	101	1,219

The Stallion and Jack registration law is of prime importance to the livestock industry in that it protects the public from dishonest stallion owners. All information concerning Stallions or Jacks can be obtained from the Department of Agriculture, where the license certificate shows a complete record of all animals.

The provisions of the statute make possible the tabulation of the exact number of pure bred stallions in the state and the removal of unsound draft stallions from public service. The law has apparently one weak feature—that of only one examination for soundness for the entire life period of the animal. As physical faults do not always develop during the first years of an animal's life, an examination and affidavit of soundness should be submitted every second year for renewal of license, in order to insure the utmost protection to the public.

This Department should exercise control over the veterinarians examining such animals for soundness, as there are many unscrupulous veterinarians in the state, who in many ways abuse the responsibility placed upon them under the present law.

It is urgently recommended that the Legislature amend the law making the expiration of all licenses for Jacks and Stallions take place at a certain time, preferably the first of January every second year. This recommendation is based on two reasons: First, the cost of handling the same from the Department headquarters will be cut nearly in half because of a considerable saving in postage, stationery and clerk hire. This date will be fixed in the minds of all owners of animals, and delinquency notifications will become less and less necessary. Second, the breeding season opens in March and registrations made for the year, being accompanied with the affidavit, give better measure of protection. Renewal could be compelled by statute not later than April 1st, thus giving ample time for both public and the Department.

The present law requires this Department to recognize all associations recognized by the United States Department of Agriculture. Since the passage of the Act the Federal Department has withdrawn recognition of all societies. This brings about a peculiar condition over which the Department has no control, and recommendation is made that the present law be amended so that recognition can be granted to all associations endorsed by the National Association of Registration Boards or the National Society of Record Associations or both, as the Commissioner of Agriculture shall determine.

DAIRYING

To carry out the provisions of the law bearing directly on the dairy industry, the Department of Agriculture has maintained four inspectors whose duty it is to inspect all places where dairy products are made or handled. This service has for its object the safeguarding of the public health, and inspectors are selected with the most painstaking care with a view to obtaining officials of the best technical knowledge and utmost fitness for the position.

The state has been divided into five inspection districts, but as there are but four inspectors, it has been necessary, from time to time, that one of four regular inspectors cover the fifth district. The division of the state into districts has greatly increased the efficiency of the dairy inspection service, because less time and expense is consumed in travel and an inspector can get over his district more frequently.

As this work is largely educational, the inspector must first get the confidence of the farmer, and convince him that sanitation is not only necessary to public health, but it is an economic necessity for him and is the shortest route to financial profits. This the inspector can do only by keeping in close touch with the farmers of his district, and by following this plan, marked progress has been made in improving sanitary conditions. The inspectors visit the farmers of their respective districts regularly and make their recommendations, allow a certain specified time for improvements and regularly check up to see that the same are made. Formerly there appears to have been some confusion as to orders issued by first one inspector and then another; misunderstanding seems to have existed as to the time in which improvements should have been made, and a double expense for the same work seems to have been entailed.

Besides visiting the dairy farms and inspecting the milk supplies of the various cities of their districts, the inspectors must inspect all creameries and cheese factories. In the latter the purpose is to promote progress. Conditions of equipment and the new product are noted. The methods of testing are observed, and wherever and whenever possible the inspector is directed to offer suggestions and assistance in order that, in addition to being an officer empowered to enforce the law, he may at the same time be an instructor spreading knowledge and information, thereby making him a valuable and much sought after individual to those engaged in the various phases of the dairy industry.

By reason of the invasion of the Washington market by foreign-made butter, which in many cases compares very favorably with the Washington product in quality, and is a competitor in price, it is absolutely essential that the home-made product outstrip its competitor in quality, and to bring about this improvement the Department has bent every energy at its command.

Heretofore the Washington producer has placed in cold storage during the months of June and July, his surplus product for those months, and he could afford to pay satisfactory prices to the producer of raw materials because he held his butter until the winter months and received the prevailing higher winter prices for the manufactured product.

Under the new arrangement, however, our dealers will be compelled to lower their summer paying prices, which will enable them to bring the butter out of storage and dispose of it at a price which will permit its sale in competition with the fresh fall grass butter of foreign manufacture offered during our winter months, which months correspond to the summer months of New Zealand and Australia.

To meet this competition our dairymen must figure closer; the unbusiness-like methods that have prevailed with many who are milking cows, will have to be supplanted by scientific methods. More attention will have to be paid to testing the individual cows, and scientific feeding must be given closer attention, because if the quality of our Washington-made butter is allowed to deteriorate, the consumer will turn to the New Zealand and Australian products.

The most efficient way in which to combat the importation of foreign-made butters is for our producers to offer to the consuming public a brand whose quality admits of no competition. On the other hand, the dairy will not produce profits to those who do not pursue intelligent economical and efficient methods.

LIST OF CREAMERIES.

Creamery	Manager	Postoffice
Adams County—		
Ritzville Ice & Creamery Co	P. L. Fowler	Ritzville
Asotin County—		
Anatone Creamery Co	R. D. Tilley	Anatone
Benton County—		
Apple City Creamery Co		Prosser
Columbia Valley Creamery Co		Kennewick
Chehalis County—		
Elma Farmer's Co-Op.Creamery Co.		Elma
Juno Creamery	R. D. Shafer	Juno
Meadowbrook Creamery		Aberdeen
Montesano Creamery Co		Montesano
Chelan County—		
Mount Glen Creamery		Cashmere
Clallam County—		
Dungeness Co-Op. Creamery Co		Dungeness
Dungeness Co-Op. Creamery Co		Sequim
Farmer's Co-Op. Creamery		Sequim
Glendale Creamery Co		Port Angeles
Glendale Creamery Co		Forks
Glendale Creamery Co		Dungeness
Little River Creamery	H. S. Coleman	Port Angeles
Spring Dairy Creamery	A. A. Evans	Dungeness
Washington Harbor Creamery Co		Port Williams
Willow Grove Creamery		Forks

LIST OF CREAMERIES—Continued.

Creamery	Manager	Postoffice
Clarke County—		
Brush Prairie Creamery		Brush Prairie
Hockinson Creamery Co		Hockinson
Jersey City Creamery		Vancouver
Portland Pure Milk & Cream Co		Amboy
Ridgefield Creamery		Ridgefield
Columbia County—		
Dayton Creamery Co	C. W. Vaughn	Dayton
Cowlitz County—		
Cowlitz Valley Creamery		Castle Rock
Damascus Creamery No. 2		Woodland
Kalama Butter & Cheese Co	E. G. Kindorf	Kalama
Kelso Creamery		Kelso
Martins' Bluff Creamery	F. M. Lane	Kalama
Shepardson Bros. Creamery		Catlin
Woodland Dairy Ass'n		Woodland
Ferry County—		
Curlew Creamery Co		Ferry
Riverside Creamery Co		Ferry
Island County—		
Bay View Creamery	J. Ewett	Langley
Isette's Creamery	Geo. W. Isette	Oak Harbor
Oak Harbor Co-Op. Creamery		Oak Harbor
Jefferson County—		
Bischop Creamery		Chimacum
Glendale Creamery	D. S. Troy	Chimacum
Glendale Creamery		Center
Glenwood Creamery	W. H. Cook	Port Ludlow
King County—		
Buttercup Creamery (Ellensburg Produce Co.)		Seattle
Enumclaw Co-Op. Creamery		Enumclaw
J. E. Evans, 1522 Pike Place Market		Seattle
Jersey Creamery		Seattle
A. B. Kasdorf, Pike Street Market		Seattle
Klock Produce Co		Seattle
Meadowbrook Condensed Milk Co		Issaquah
Northwest Dairy Co	Jno. Burnam	Seattle
Redmond Creamery	W. H. Halloway	Redmond
Red Shield Creamery		Seattle
Swift & Co		Seattle
Tolt Creamery		Tolt
Turner & Pease Co		Seattle
Kitsap County—		
Bremerton Creamery & Produce Co		Bremerton
Farmers' Ass'n Creamery		Port Orchard
Kittitas County—		
Alberta Co-Op. Creamery		Ellensburg
Cle Elum Creamery	Robert Reid	Cle Elum
Ellensburg Creamery & Produce Co		Ellensburg
Homestead Creamery Co	J. G. Triplett	Liberty
McFry Creamery Co		Liberty
Mountain Home Creamery		Cle Elum
Spring Creek Co-Op. Creamery		Ellensburg
Klickitat County—		
Camas Prairie Creamery Co		Glenwood
Camas Co-Op. Creamery Co		Laurel
Ross Creamery Co		Goldendale
Trout Lake Co-Op. Dairy Ass'n		Trout Lake
Lewis County—		
Big Bottom Creamery	A. Miller	Randle
Claquato Creamery Co	Paul Wenzelburger	Chehalis
Clover Valley Creamery	S. P. Graverson	Winlock
Cowlitz Prairie Creamery	Victor Furrer	Winlock
Daisy Creamery	C. E. Flanigan	Ethel
Eveline Dairy	S. H. Evans	Eveline
Farmer's Co-Op. Creamery		Centralia
Grass Valley Creamery	J. H. England	Winlock
Jepson's Independent Creamery	Ed Jepson	Toledo

LIST OF CREAMERIES—Continued.

Creamery	Manager	Postoffice
Lewis County—(Continued)		
Jersey Dairy	F. F. Roestner	Centralia
Jersey Pansy Creamery	F. G. Chezek	Winlock
Lacamas Creamery Co	W. A. McErren	Winlock
Lewis County Co-Op. Creamery Co.		Chehalis
Lone Star Creamery	J. E. Dunn	Harmony
Locust Creamery	J. R. Morton	Winlock
Pacific Coast Condensed Milk Co		Chehalis
Pleasant Valley Creamery	Joseph Kaiser	Chehalis
Rose Geranium Creamery Co	G. W. Powers	Centralia
Vonrotz Bros. Creamery		Winlock
White Clover Creamery	F. H. Hanke	Chehalis
White Rose Creamery Co		Harmony
Winlock Co-Op. Creamery Co		Winlock
Mason County—		
Mason County Fruit Growers Ass'n.		Shelton
Shelton Creamery Co		Shelton
Okanogan County—		
Hazelwood Creamery Co., Ltd		Tonasket
Methow Valley Creamery Ass'n		Twisp
Oroville Creamery Co		Oroville
Spring Coulee Co-Op. Creamery Co.		Okanogan
Washington Star Creamery	A. J. Haase	Winthrop
Pacific County—		
Glen Tana Creamery		South Bend
Menlo Creamery Co	C. B. Dobler	Menlo
Prim Rose Creamery	J. N. Schmidt & Son	Brooklyn
Pierce County—		
Geo. Barney & Sons		Roy
Buckley Co-Op Creamery Co		Buckley
Farmers' Co-Op. Creamery		Buckley
German Creamery	Gustav Steinbarn	Roy
Lake Park Creamery	J. W. Evans	Spanaway
Miller Bros.' Co		Tacoma
Moore's Creamery Co	Geo. Moore	Roy
Mulford's Creamery		South Tacoma
Orting Creamery	H. Wiesner	Orting
Puyallup Creamery Co		Puyallup
Riverside Creamery		Kapowsin
Royal Creamery Co	H. C. Fry	Roy
Roy Co-Op. Creamery		Roy
Ruddick's Creamery Co		Roy
Sound Creamery Co, 1910 Jefferson Ave		Tacoma
Tacoma City Creamery		Tacoma
San Juan County—		
Friday Harbor Creamery		Friday Harbor
Lopez Island Co-Op. Creamery		Richardson
Royal Dairy Co		Lopez
Royal Dairy Co		Friday Harbor
San Juan Co-Op. Creamery Co		Friday Harbor
Skagit County—		
Anacortes Creamery Co		Anacortes
Edison Creamery Co		Edison
Farmers' Co-Op. Creamery		Mt. Vernon
Farmers' Creamery Co		Sedro Woolley
Finstad & Utgard		Fir Station (Conway)
Mt. Vernon Co-Op Dairy Prod. Co.		Mt. Vernon
Mount Vernon Creamery Co		Mt. Vernon
Snohomish County—		
Arlington Co-Op. Ass'n		Arlington
Brown Bessie Creamery	Jeffery Hilton	Marysville
H. H. Campbell		Edmonds
Carnation Creamery		Snohomish
Cedar Brook Creamery	L. D. Townsend	Snohomish
Central Farm Creamery	Swan Johnson	Arlington
Coast Ice & Cold Storage Co		Everett
Fern Bluff Creamery Co		Monroe
Highland Creamery Co		Granite Falls

LIST OF CREAMERIES—Continued.

Creamery	Manager	Postoffice
Snohomish County—(Continued)		
Hillside Creamery Co	L. E. Holmes	Edmonds
John Isaakson		Machias
Mobins' Creamery	Oswald Mobins	Hartford
Monroe Co-Op. Creamery	T. N. Bennett	Monroe
Pleasant Valley Creamery	John Reese	Startup
Riverside Creamery	Dan McKinnon	Hartford
Robe Creamery	Wm. Milne	Granite Falls
Snohomish Creamery		Snohomish
Snohomish Dairy Products Co		Snohomish
Stanwood Co-Op. Creamery Co		Stanwood
Sultan Basin Creamery		Snohomish
Woods Creek Creamery	Lewis Steffens	Monroe
Spokane County—		
Hazelwood Creamery Co., Ltd		Spokane
Schallinger Produce Co		Spokane
Stevens County—		
Old Dominion Creamery Co		Colville
Thurston County—		
Brookside Farm Creamery	L. W. Kennedy	Olympia
Brown's Creamery		Sherlock
Capital City Creamery		Olympia
Farmers' Co-Op. Creamery		Olympia
Germania Creamery Co	Albert Gehrke	Rainier
Hull's Creamery Co	Wm. Hull	Yelm
Long Point Creamery	C. F. Behklan	Olympia
Meacham's Creamery	W. C. Meacham	Tumwater
Pacific Creamery Co	J. D. Kinsey	Tumwater
Standard Creamery	C. M. Brainard	Olympia
Star Creamery	Mrs. D. Kelsey	Rochester
State Flower Creamery	August Rixie	Olympia
Tenino Creamery Co		Tenino
Ward's Creamery	J. W. Riley	Rainier
Yelm Co-Op. Creamery		Yelm
Wahkiakum County—		
Cathlamet Creamery		Cathlamet
Ferndale Creamery Co	K. Osburn	Cathlamet
J. E. Johnson's Creamery		Gray's River
Skamokawa Farmers' Cry. Ass'n		Skamokawa
Walla Walla County—		
Attalia Dairy Products Co		Attalia
Waitsburg Creamery Co	Chas. Smith	Waitsburg
Walla Walla Creamery	Ward Emigh	Walla Walla
Whatcom County—		
Acme Dairy Ass'n		Acme
Banner Creamery Co		Lynden
Custer Creamery Co		Custer
Ferndale Creamery Co		Ferndale
Ford Creamery Co		Bellingham
Laurel Creamery Co		Laurel
Lynden Creamery Co		Lynden
Nooksack Creamery Co		Nooksack
Nooksack Valley Co-Op. Creamery		Nooksack
Royal Dairy Co		Bellingham
Royal Dairy Co		Custer
Royal Dairy Co		Lynden
Sumas Creamery Co		Sumas
Turner Pease Co		Custer
Whitman County—		
Colfax Creamery Co		Colfax
Rosalia Creamery Co		Rosalia
Tekoa Creamery Co		Tekoa
W. S. C. Creamery		Pullman
Yakima County—		
Cascade Creamery		North Yakima
Farmers' Co-Op. Creamery		Sunnyside
Maplewood Creamery Co		North Yakima
Mayflower Creamery		Selah
Springvale Creamery Co		North Yakima
Toppenish Creamery Co		Toppenish
Yakima City Creamery		North Yakima
Yakima Creamery Co		Toppenish

BUTTER PRODUCTION BY COUNTIES FOR THE YEAR NOVEMBER 1, 1912, TO NOVEMBER 1, 1913.

COUNTY	Pounds	Value
Adams	15,988	$4,727 65
Asotin	19,060	6,286 50
Benton	163,402	51,996 65
Chehalis	299,763	95,464 38
Clallam	731,688	249,784 87
Clarke	304,982	106,797 70
Cowlitz	182,133	63,915 74
Ferry	68,416	23,945 60
Island	33,315	11,160 62
Jefferson	330,917	114,166 87
King	2,483,473	857,082 21
Kitsap	32,518	10,405 76
Kittitas	580,066	197,022 02
Klickitat	113,765	37,208 96
Lewis	524,597	176,445 80
Mason	72,484	24,282 14
Okanogan	277,498	91,560 89
Pacific	22,659	7,515 28
Pierce	482,366	167,488 58
San Juan	26,860	8,908 00
Skagit	268,316	90,052 91
Snohomish	1,225,593	419,099 09
Spokane	950,316	317,941 89
Stevens	51,890	16,845 85
Thurston	334,536	113,824 68
Wahkiakum	345,519	118,107 58
Walla Walla	385,368	129,098 28
Whatcom	1,499,196	502,869 13
Whitman	151,377	50,983 87
Yakima	398,241	127,891 70
Total	12,411,257	$4,211,828 55

BUTTER PRODUCTION BY COUNTIES FOR THE PERIOD NOVEMBER 1, 1913, TO JULY 1, 1914.

COUNTY	Pounds	Value
Adams	16,564	$4,960 20
Benton	79,521	23,856 30
Chehalis	226,009	71,598 12
Clallam	350,541	94,207 60
Clarke	236,181	72,786 62
Cowlitz	177,319	51,652 86
Ferry	69,291	20,719 89
Island	165,655	49,952 62
Jefferson	478,571	144,205 42
King	1,804,557	577,956 19
Kitsap	77,588	24,811 92
Kittitas	466,160	144,860 49
Klickitat	45,830	13,840 74
Lewis	244,967	79,240 68
Mason	43,825	17,530 00
Okanogan	151,852	45,880 42
Pacific	1,234	431 90
Pierce	770,501	248,669 19
San Juan	55,901	16,770 30
Skagit	194,084	64,316 18
Snohomish	857,765	271,163 22
Spokane	860,871	292,526 14
Stevens	39,550	12,260 50
Thurston	316,851	106,768 74
Wahkiakum	109,499	32,849 70
Walla Walla	280,487	89,755 84
Whatcom	1,133,178	348,061 82
Whitman	109,808	33,225 01
Yakima	905,709	285,824 68
Total	10,269,364	$3,239,567 74

TOTAL BUTTER PRODUCTION BY COUNTIES FOR THE PERIOD NOVEMBER 1, 1912, TO JULY 1, 1914.

COUNTY	Pounds	Value
Adams	82,562	$9,687 85
Asotin	19,050	6,286 50
Benton	242,928	75,852 95
Chehalis	525,862	167,057 50
Clallam	1,082,229	343,991 97
Clarke	541,163	179,584 82
Cowlitz	359,452	115,568 10
Ferry	137,707	44,665 49
Island	196,970	61,118 24
Jefferson	809,488	228,871 79
King	4,288,060	1,435,068 40
Kitsap	110,106	35,217 68
Kittitas	1,046,226	341,862 61
Klickitat	159,595	51,049 70
Lewis	769,564	255,685 98
Mason	116,309	41,812 14
Okanogan	429,345	137,390 81
Pacific	23,898	7,947 13
Pierce	1,252,867	416,157 72
San Juan	82,761	25,678 80
Skagit	457,400	154,869 04
Snohomish	2,083,858	690,262 81
Spokane	1,800,687	610,468 08
Stevens	91,440	28,605 85
Thurston	701,387	219,098 42
Wahkiakum	455,018	150,967 23
Walla Walla	665,855	218,854 12
Whatcom	2,632,374	845,920 95
Whitman	261,180	89,158 88
Yakima	1,308,950	413,716 38
Total	22,680,621	$7,451,396 29

CHEESE MADE IN STATE BY COUNTIES, DURING THE YEAR NOVEMBER 1, 1912, TO NOVEMBER 1, 1913.

COUNTY	Pounds	Value
Cowlitz	29,099	$5,198 11
Jefferson	89,011	14,079 88
Lewis	7,818	1,217 00
Total	125,928	$20,494 99

CHEESE MADE IN STATE BY COUNTIES DURING THE PERIOD NOVEMBER 1, 1913, TO JULY 1, 1914.

COUNTY	Pounds	Value
Clarke	66,200	$13,932 00
Cowlitz	51,284	9,795 21
Jefferson	100,082	15,061 51
Lewis	49,097	9,761 10
Pacific	88,305	17,661 00
Snohomish	89,698	14,458 72
Total	444,611	$80,669 54

TOTAL CHEESE MADE IN STATE BY COUNTIES, DURING THE PERIOD NOVEMBER 1, 1912, TO JULY 1, 1914.

COUNTY	Pounds	Value
Clarke	66,200	$18,902 00
Cowlitz	80,388	14,998 82
Jefferson	189,043	29,161 89
Lewis	56,910	10,978 10
Pacific	88,305	17,661 00
Snohomish	89,698	14,458 72
Total	570,584	$101,154 58

LIST OF CHEESE FACTORIES.

Glendale Creamery Co	Chimacum
Glendale Creamery Co	Center
Bischop Creamery Co	Chimacum
Creamery & Cheese Factory	Tolt
Vonrotz Bros.	Winlock
Hazelwood Co., Ltd.	Cheney
Damascus Creamery No. 2	Woodland
Royal Dairy Co	Lynden
Royal Dairy Co	Norman

CONDENSED MILK PRODUCED IN STATE

For the Year November 1, 1912, to November 1, 1913.

Pounds Whole Milk Used.	*Cases Produced*	*Value*
115,762,137	1,196,894	$4,168,571 65

For the Period November 1, 1913, to July 1, 1914.

Pounds Whole Milk Used.	*Cases Produced*	*Value*
107,089,401	1,104,743	$3,734,201 25

TOTAL

For the Period November 1, 1912, to July 1, 1914.

Pounds Whole Milk Used.	*Cases Produced*	*Value*
222,851,538	2,301,637	$7,902,772 90

LIST OF CONDENSED MILK FACTORIES.

Bordens Condensed Milk Co	Auburn
Meadowbrook Condensed Milk Co	Issaquah
Mount Vernon Condensed Milk Co	Mount Vernon
Pacific Coast Condensed Milk Co	Emerson, Kent, Chehalis, Stanwood, Sedro Woolley, Mt. Vernon, Monroe
Snohomish Dairy Products Co	Snohomish

LIST OF CANCELLED STATE BUTTER BRANDS.

Number	CREAMERY	LOCATION
9	Jersey Creamery	Seattle
19	Geo. W. Isette	Oak Harbor
152	Crystal Creamery	Olympia, Wn.
358	Carnation Creamery	Snohomish
362	Deer Creek Dairy	Colbert
407	Brookside Farm	Olympia
455	Sunset Creamery	Rainier
485	Summit Creamery	Summit
516	Mulford's Creamery	South Tacoma
527	Schuffenhawer's Creamery	Roy
545	Junction Creamery	Chimacum
580	Highland Creamery	Granite Falls
595	Monroe Co-Op. Creamery	Monroe
618	Prim Rose Creamery	Brooklyn
A 6	Little River Creamery	Port Angeles
A 44	Dayton Creamery Co	Dayton, Wash.
A 59	Colville Creamery Co	Colville
A 64	Broadview Dairy	Spokane
A 73	Friday Harbor Creamery	Friday Harbor
A 76	Kalama Butter & Cheese Co	Kalama
A 87	Forest Home Creamery	Hartford
A 144	Waitsburg Creamery Co	Waitsburg
A 145	White Lilly Creamery	Chehalis
A 158	Spring Coulee Co-Op. Creamery	Okanogan
A 162	Mountain Glen Creamery	Cashmere
A 171	Cedar Brook Creamery	Snohomish
A 172	Hillside Home Creamery	South Tacoma
A 179	Fred Scheuber	Chehalis
A 182	White Clover Creamery	Chehalis
A 188	Elmwood Creamery	Centralia
A 195	Spring Creek Creamery Co	North Yakima
A 204	Jepson's Independent Creamery	Toledo
A 207	Hockinson Creamery Co	Hockinson
A 212	Central Farm Creamery	Arlington
A 214	Lewis County Co-Op. Creamery	Chehalis
A 217	J. B. Barley	Grandview
A 219	Moore's Creamery	Roy
A 222	Tolt Creamery	Tolt
A 223	Red Seal Creamery	Seattle
A 224	Red Seal Creamery	Seattle
A 231	Elwha Creamery	Port Angeles
A 237	Loqust Creamery	Winlock
B 1	Farmer's Co-Op. Creamery	Camas
B 14	Cream Rose Creamery	Seattle
B 15	Geo. Barney & Sons	Roy

PRODUCTION OF DAIRIES BY COUNTIES FOR THE PEDIOD NOVEMBER 1, 1912, TO JULY 1, 1914.

COUNTY	Gallons milk	Gallons cream	Value milk	Value cream	Total value
Adams	22,200	432	$6,810 00	$612 00	$7,422 00
Benton	15,985	376	3,899 40	451 20	4,350 60
Chehalis	324,610	14,067	97,586 20	25,566 36	123,152 56
Clallam	61,114	1,480	15,993 50	2,368 00	18,361 50
Clarke	101,490	3,010	28,327 00	4,656 00	32,983 00
Cowlitz	24,000	200	6,720 00	320 00	7,040 00
Ferry	29,100	1,408	11,640 00	3,806 00	15,446 00
Garfield	8,010	40	2,391 00	60 00	2,451 00
Jefferson	71,451	13,682	22,980 02	32,652 80	55,632 82
King	4,483,418	302,888	1,475,534 09	495,455 30	1,970,989 39
Kitsap	215,125	6,320	64,840 00	7,651 20	72,491 20
Kittitas	49,223	1,821	16,515 75	2,856 00	19,371 75
Klickitat	18,000	1,200	5,040 00	1,920 00	6,960 00
Lewis	137,924	7,288	41,456 20	10,487 20	51,943 40
Lincoln	35,267	565	10,640 32	909 00	11,549 32
Okanogan	12,915	280	4,254 80	452 00	4,706 80
Pacific	132,250	2,000	35,905 00	2,520 00	38,425 00
Pend Oreille	23,699	806	9,131 80	1,418 00	10,549 80
Pierce	1,581,428	234,002	548,187 42	372,801 72	920,989 14
Skagit	85,488	2,927	21,151 50	4,361 40	25,512 90
Snohomish	541,663	21,845	175,020 20	25,309 00	200,329 20
Spokane	2,257,660	158,075	911,491 99	305,963 86	1,217,455 85
Stevens	23,675	820	6,317 50	1,194 00	7,511 50
Thurston	117,782	2,552	34,412 66	3,818 40	38,231 06
Walla Walla	44,950	4,605	13,485 00	5,210 00	18,695 00
Whatcom	406,722	102,828	110,684 82	108,183 60	218,868 42
Whitman	124,435	9,235	37,860 00	12,837 00	50,697 00
Yakima	61,114	1,980	15,993 50	2,368 00	18,361 50
Totals........	10,960,598	884,597	$3,734,269 17	$1,436,208 04	$5,170,477 21

Total gallons milk	10,960,598	
Total gallons cream	884,597	11,845,195 gallons
Total value milk	$3,734,269 17	
Total value cream	1,436,208 04	$5,170,477 21

The following is a list of samples analyzed by the State Chemist:

DAIRY ANALYSES BY STATE CHEMISTS.

By Prof. Elton Fulmer, Pullman, Wash. (State College).

BUTTER		MILK		CREAM	
Legal	Illegal	Legal	Illegal	Legal	Illegal
1	1	61	11	43	1

118 total analyses.

By Dr. C. W. Johnson, Seattle, Wash. (University).

BUTTER		MILK		CREAM	
Legal	Illegal	Legal	Illegal	Legal	Illegal
4	1	132	50	49	27

One sample cheese. (Legal.)

264 total analyses.

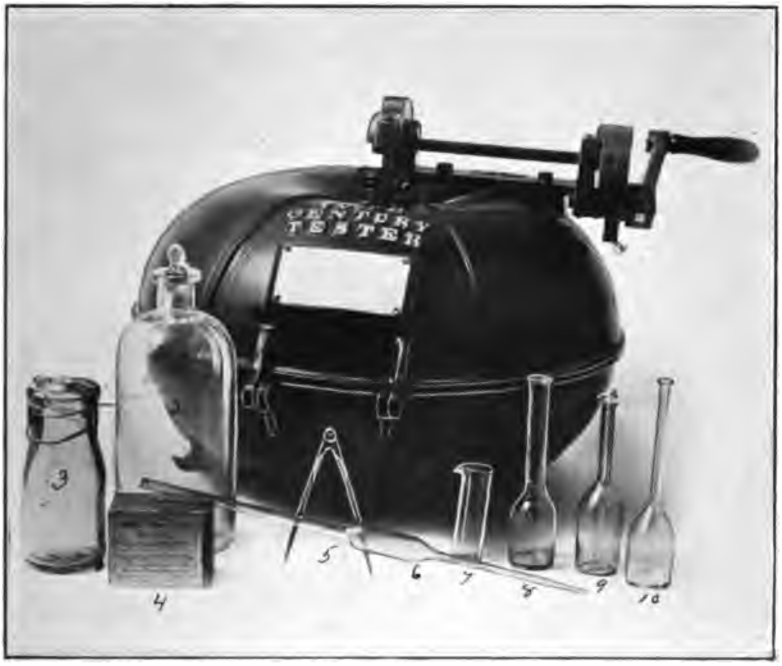
TOTAL VALUE OF DAIRY PRODUCTS IN STATE DURING PERIOD NOVEMBER 1, 1912, TO JULY 1, 1914.

Milk and Cream	$5,170,477.21
Butter	7,451,396.29
Condensed Milk	7,902,772.90
Cheese	101,154.53
Total	$20,625,800.93

Wherever willful violations of the law prevail, prosecutions are made. During the period six prosecutions have been made among dairymen for the sale of adulterated milk; twenty-six restaurants and hotel keepers have been arrested for the unlawful sale of skimmed milk to patrons; one Spokane concern was prosecuted for the sale of renovated butter in plain wrappers, being fined $25.00 and costs.

In connection with the sale of milk in restaurants, hotels and stores, the importance of legislative enactment providing that milk sold in such places be sold in the original package, is strongly urged. Such a measure would not only enable the inspector to place the blame where it belongs, but in addition would protect the storekeeper and producer alike. Out of the thirty samples taken in restaurants, twenty-eight were illegal.

It has been too prevalent in the past to lay all the blame for dirty milk on the shoulders of the producer, when it is generally the ignorant or careless storekeeper who is to blame. The sale of bulk milk in stores and restaurants is wrong, for no matter how bulk milk is handled, there is always likelihood (aside from premeditated adulteration) that some customer will be served at the expense of others, as few dealers will go to the trouble of stirring the milk before pouring it out of the can. Again, there is danger of bacterial contaminations in bulk milk, especially in stores and restaurants, as proprietors and employes of such places do not, as a rule, understand the principles underlying its proper handling.



A BABCOCK TESTER.

Every dairyman should own one. This apparatus will indicate the "Boarders" or unprofitable cows in the herd.

REPORT OF DAIRY INSPECTORS.

A. D. Fish, September 1, 1913, to July 1, 1914.
I. J. Minnick, August 1, 1913, to July 1, 1914.
J. E. Harter, March 1, 1914, to July 1, 1914.
L. W. Hanson, July 1, 1913, to March 1, 1914.
W. T. Bowman, July 1, 1913, to May 1, 1914.
G. S. Henderson, July 1, 1913, to July 31, 1913.

	Fish	Minnick	Harter	Hanson	Bowman	Henderson
Dairy inspections	1,066	727	655	115	752	207
Creamery inspections	65	1	13	92	18	......
Store and depot inspections	1,122	13	49	116	81	......
Cheese factories inspected	5	1	....	4	....	......
Condensed milk factories inspected	8	....	....	5	....	......
Samples of milk for butter-fat	77	26	15	123	134	......
Samples of cream for butter-fat	30	7	....	153	99	......
Samples of butter	83	1	....	15	49	......
Samples for bacteriological or chemical examination	1	....	....	174	189	......
Milk cans inspected	12,574	168	288	962	3,006	2,178
Milk cans condemned	47	1	9	119	13	......
Wagon inspections	168	31	....	34	152	......
Milk train inspections	2	....	8	....	8	......
Complaints answered	10	12	24	9	9	......
Reinspections	85	9	34	10	22	......
Dairies, creameries, stores, depots, factories closed	....	13	1	....	9	......
Arrests	16	3	....	5	45	......
Convictions	2	2	....	5	3	......
Fines	2	1	30	....	1	......

TOTALS.

Dairy inspections	3,522
Creamery inspections	189
Store and depot inspections	1,331
Cheese factories inspected	10
Condensed milk factories inspected	13
Wagon inspections	385
Milk train inspections	18
Reinspections	160
Total inspections	5,628

Samples milk for butter-fat	375
Samples cream for butter-fat	289
Samples of butter	148
Samples for bacteriological or chemical examination	364
Total samples	1,176
Complaints answered	64

Milk cans inspected	19,120
Milk cans condemned	189
Dairies, creameries, stores, depots or factories closed.	23
Arrests	69
Convictions	12
Fines	34

LIST OF CREAMERIES—Continued.

Creamery	Manager	Postoffice
Snohomish County—(Continued)		
Hillside Creamery Co	L. E. Holmes	Edmonds
John Isaakson		Machias
Mobins' Creamery	Oswald Mobins	Hartford
Monroe Co-Op. Creamery	T. N. Bennett	Monroe
Pleasant Valley Creamery	John Reese	Startup
Riverside Creamery	Dan McKinnon	Hartford
Robe Creamery	Wm. Milne	Granite Falls
Snohomish Creamery		Snohomish
Snohomish Dairy Products Co		Snohomish
Stanwood Co-Op. Creamery Co		Stanwood
Sultan Basin Creamery		Snohomish
Woods Creek Creamery	Lewis Steffens	Monroe
Spokane County—		
Hazelwood Creamery Co., Ltd		Spokane
Schallinger Produce Co		Spokane
Stevens County—		
Old Dominion Creamery Co		Colville
Thurston County—		
Brookside Farm Creamery	L. W. Kennedy	Olympia
Brown's Creamery		Sherlock
Capital City Creamery		Olympia
Farmers' Co-Op. Creamery		Olympia
Germania Creamery Co	Albert Gehrke	Rainier
Hull's Creamery Co	Wm. Hull	Yelm
Long Point Creamery	C. F. Behklan	Olympia
Meacham's Creamery	W. C. Meacham	Tumwater
Pacific Creamery Co	J. D. Kinsey	Tumwater
Standard Creamery	C. M. Brainard	Olympia
Star Creamery	Mrs. D. Kelsey	Rochester
State Flower Creamery	August Rixie	Olympia
Tenino Creamery Co		Tenino
Ward's Creamery	J. W. Riley	Rainier
Yelm Co-Op. Creamery		Yelm
Wahkiakum County—		
Cathlamet Creamery		Cathlamet
Ferndale Creamery Co	K. Osburn	Cathlamet
J. E. Johnson's Creamery		Gray's River
Skamokawa Farmers' Cry. Ass'n		Skamokawa
Walla Walla County—		
Attalia Dairy Products Co		Attalia
Waitsburg Creamery Co	Chas. Smith	Waitsburg
Walla Walla Creamery	Ward Emigh	Walla Walla
Whatcom County—		
Acme Dairy Ass'n		Acme
Banner Creamery Co		Lynden
Custer Creamery Co		Custer
Ferndale Creamery Co		Ferndale
Ford Creamery Co		Bellingham
Laurel Creamery Co		Laurel
Lynden Creamery Co		Lynden
Nooksack Creamery Co		Nooksack
Nooksack Valley Co-Op. Creamery		Nooksack
Royal Dairy Co		Bellingham
Royal Dairy Co		Custer
Royal Dairy Co		Lynden
Sumas Creamery Co		Sumas
Turner Pease Co		Custer
Whitman County—		
Colfax Creamery Co		Colfax
Rosalia Creamery Co		Rosalia
Tekoa Creamery Co		Tekoa
W. S. C. Creamery		Pullman
Yakima County—		
Cascade Creamery		North Yakima
Farmers' Co-Op. Creamery		Sunnyside
Maplewood Creamery Co		North Yakima
Mayflower Creamery		Selah
Springvale Creamery Co		North Yakima
Toppenish Creamery Co		Toppenish
Yakima City Creamery		North Yakima
Yakima Creamery Co		Toppenish

BUTTER PRODUCTION BY COUNTIES FOR THE YEAR NOVEMBER 1, 1912, TO NOVEMBER 1, 1913.

COUNTY	Pounds	Value
Adams	15,988	$4,727 65
Asotin	19,050	6,286 50
Benton	163,402	51,996 65
Chehalis	299,763	95,464 88
Clallam	731,688	249,784 87
Clarke	304,982	106,797 70
Cowlitz	182,133	63,915 74
Ferry	68,416	23,945 60
Island	33,315	11,160 62
Jefferson	330,917	114,166 37
King	2,483,473	857,082 21
Kitsap	32,518	10,405 76
Kittitas	580,066	197,022 02
Klickitat	113,765	37,208 96
Lewis	524,597	176,445 30
Mason	72,484	24,282 14
Okanogan	277,498	91,560 89
Pacific	22,659	7,515 28
Pierce	482,366	167,488 58
San Juan	26,860	8,908 00
Skagit	263,316	90,052 91
Snohomish	1,225,598	419,099 09
Spokane	950,316	317,941 89
Stevens	51,890	16,345 35
Thurston	384,536	118,824 68
Wahkiakum	345,519	118,107 58
Walla Walla	385,368	129,098 28
Whatcom	1,499,196	502,869 13
Whitman	151,377	50,983 87
Yakima	398,241	127,891 70
Total	12,411,257	$4,211,828 55

BUTTER PRODUCTION BY COUNTIES FOR THE PERIOD NOVEMBER 1, 1913, TO JULY 1, 1914.

COUNTY	Pounds	Value
Adams	16,564	$4,960 20
Benton	79,521	23,856 30
Chehalis	226,009	71,598 12
Clallam	350,541	94,207 60
Clarke	236,181	72,736 62
Cowlitz	177,319	51,652 36
Ferry	69,291	20,719 89
Island	165,655	49,952 62
Jefferson	478,571	144,205 42
King	1,804,557	577,956 19
Kitsap	77,588	24,811 92
Kittitas	466,160	144,860 49
Klickitat	45,830	13,840 74
Lewis	244,967	79,240 68
Mason	43,825	17,580 00
Okanogan	151,852	45,830 42
Pacific	1,234	481 90
Pierce	770,501	248,669 19
San Juan	55,901	16,770 30
Skagit	194,084	64,316 13
Snohomish	857,765	271,163 22
Spokane	860,371	292,526 14
Stevens	39,550	12,260 50
Thurston	316,851	106,768 74
Wahkiakum	109,499	32,849 70
Walla Walla	280,487	89,755 84
Whatcom	1,133,178	343,051 82
Whitman	109,803	33,225 01
Yakima	905,709	285,824 68
Total	10,269,364	$3,239,567 74

Tabulation of Results of the Use of Hog Cholera Serum in Kentucky by the Kentucky Agricultural Experiment Station During the Month of June, 1914.

Apparently Healthy Herds.

No.	Herds treated simultaneously		35
"	Hogs treated simultaneously		1,229
"	Hogs suspicious (Temperature over 103.5)		207
"	Hogs reported		1229
"	Hogs not reported		0
"	Herds reported		35
"	Herds not reported		0
"	Hogs treated lived	96.1%	1181
"	Hogs treated died from all causes	3.9%	48

Suspicious and Possibly Exposed Herds.

No.	Herds treated serum—alone and simultaneously		8
"	Hogs treated serum—alone and simultaneously		317
"	Hogs suspicious (Temperature over 103.5)		32
"	Hogs reported		317
"	Hogs not reported		0
"	Herds reported		8
"	Herds not reported		0
"	Hogs treated lived	98.73%	313
"	Hogs treated died from all causes	1.27%	4

Suspicious and Sick Herds.

No.	Herds given serum—alone		57
"	Hogs given serum—alone		1831
"	Hogs suspicious (Temperature over 103.5)		584
"	Hogs reported		1634
"	Hogs not reported		197
"	Herds reported		51
"	Herds not reported		6
"	Hogs treated lived	89.8%	1467
"	Hogs treated died from all causes	10.2%	167

Summary.

Total number of herds treated		100
Total number of hogs treated		3377
Total number of hogs reported		3180
Total number of hogs suspicious		823
Total number of hogs lived	93.1%	2961
Total number of hogs died	6.9%	219

If we were to calculate the value of animals saved from Hog Cholera by the use of Anti-Hog Cholera serum during the month of June on the basis of the one hundred herds treated, assuming that the average mortality would have prevailed (90 per cent) had they not been vaccinated, and that the average value of each animal be $4.00, this month's work alone would have saved the one hundred owners approximately $12,157.00.

Yours very truly,
ROBERT GRAHAM.

Our experience in the State of Washington has demonstrated the success of serum treatment when applied systematically under state control. While the unregulated use of good, bad and inferior serum may reduce Hog Cholera, it can never be eradicated in that way. It is absolutely necessary for the state to exercise complete control in this as in all other contagious diseases.

The Department has proposed to the State College the advisability of establishing a serum laboratory in connection with the veterinary department of that institution. At this time an investigation of the practicability of doing this is being made by officials of the college. Until some definite decision is reached as to the feasibility of this plan, and as a temporary measure of relief, I respectfully recommend that for the present the state adopt the policy of purchasing serum and furnishing it under our regulations, at one-half the purchase price to farmers of our state.

As the swine industry develops and the farmers become more fully acquainted with the disease and its control, the state can undertake the manufacture of serum at very little expense.

ACTINOMYCOSIS.

Animals afflicted with generalized actinomycosis are destroyed as worthless. Those that are afflicted with a mild form are quarantined or destroyed, under inspection, at the owner's option.

BLACKLEG.

Blackleg or Symptomatic anthrax prevails in certain sections of our state. The disease is only met in young cattle and can be effectively controlled by vaccination.

Most farmers can recognize the disease when it occurs on account of the rapid progress of the disease and condition of flesh when skin is removed. During the period we have furnished vaccine in the amount of 10,000 doses to the stockmen.

MANGE.

This disease has on several occasions been reported but upon investigation the trouble proved to be ptheriosis or lice, which readily responded to the treatment recommended.

SCABIES.

It gives me great pleasure to report that the cattle and sheep of the state are free from scab and that there is no restriction against the free movement of cattle or sheep between Washington and other states.

CONTAGIOUS KERATITIS.

Contagious keratitis, an infectious disease involving the eyes of cattle, has been reported. Through immediate action and quarantine the trouble was controlled.

The Department has received numerous complaints of infectious diseases which, on investigation, proved to be merely local and systematic disturbances and in no manner dangerous to animals of the same species.

TUBERCULOSIS.

In handling the tuberculin test work on dairy animals it has been the endeavor of the Department to interest the dairymen in the question through economical reasons, rather than the question of public health.

The disease is a menace to the cattle industry of the state, and, being transmissible from animal to man, vitally concerns the public. It is the strong conviction of the Department that any progress that is to be made in eradicating the disease will have to be made along the line of the intrinsic value of the industry, and as long as any bitterness or controversy exists over the methods of eradication, efforts to stamp it out will result in only a partial success, if effective at all.

When the diarymen realize that the question of tuberculosis is purely a cow question, much of the confusion and odium which now prevails in many quarters will cease.

During the period covered by this report, the Department has tuberculin-tested 6,562 head of dairy cattle. Of this number, 349 reacted to the test and were marked as diseased. Of these diseased cattle, 217 were destroyed with consent of their owners; the remainder are retained in quarantine.

While the majority of those engaged in the livestock industry in the state have confidence in the Department and express a desire to assist in the control of tuberculosis, there are unfortunately some who do not believe any effort should be made at all to control it, and that it is not transmissible from animal to man and regulation is of no economic importance to the industry.

This latter class renders the control of the disease difficult to say the least, and while everyone who has aught to do with the present policy has faith in it, it is nevertheless strongly felt that if the public is to receive the maximum protection from the disease, and ability to secure that which it has a right to demand—a pure and wholesome milk—our present livestock laws must be strengthened, and enabling appropriation commensurate with the demands of that remedial legislation, allowed.

The report of the International Commission for the Control of Bovine Tuberculosis is appended herein for immediate reference by all those to whom it may be of concern.

In so far as the Department has been able to do so, the broad policy established by the International Commission has been followed out, and if adequate legislation permitted this policy to be carried to a finality, it is felt that the disease could be controlled with very little loss to the livestock industry as a whole.

RABIES.

The disease called Rabies or Hydrophobia in man, is one of the most terrible maladies known to medical science, although some skepticism as to the disease persists and is industriously fostered by the publication of erroneous views. The infectious nature of the disease has been abundantly established and there is no reason to doubt the existence of Rabies in the State of Washington. At this time the disease prevails to a considerable extent in King and Pierce counties and is a menace to human life. Fortunately there were no deaths reported among humans, which is undoubtedly due to the protection afforded by the Pasteur treatment.

The following is a report on Rabies in the City of Seattle:

RABIES AND DOG-BITES IN SEATTLE.

Year 1913-1914	September	October	November	December	January	February	March	April	May	June	July	August	Totals
Clinical rabies seen by veterinarian	49	62	59	50	52	61	67	52	40	12	9	13	526
Animals examined in laboratory.	16	23	20	18	15	9	13	14	13	8	8	8	165
Animals examined—Rabies positive	11	19	15	10	11	6	8	9	7	6	3	3	108
Persons bitten by known rabid dogs	2	9	10	8	15	7	8	5	7	6	2	2	81
Persons bitten by known rabid dogs—Treated	2	8	6	4	11	7	3	4	4	6	2	2	59
Persons possibly infected but not bitten	2	9	7	10	6	3	9	7	2	1	2	2	60
Persons possibly infected but not bitten—Treated	2	5	3	4	3	2	9	5	....	1	....	....	34
Persons bitten by probably rabid dogs	....	2	7	9	6	6	4	5	....	1	....	....	40
Persons bitten by probably rabid dogs—Treated	....	2	2	4	2	2	1	3	....	....	....	....	16
Persons bitten by probably not rabid dogs	....	5	4	1	3	....	....	5	3	4	1	2	28
Persons bitten by probably not rabid dogs—Treated	....	1	....	....	....	....	....	....	....	....	....	....	1
Persons bitten by known not rabid dogs	....	1	9	10	4	7	8	6	9	7	7	11	79
Persons bitten or possibly infected	4	26	37	33	34	23	29	28	21	19	12	17	286
Persons bitten or possibly infected—Treated	4	16	11	12	16	11	10	12	4	7	2	2	112

Theoretically Rabies is one of the most easily eradicated of contagious diseases, as all that is required is the muzzling of dogs for a sufficient time. The Department, immediately after the outbreak in King and Pierce counties, undertook to enforce a muzzling regulation, but in the absence of a penalty section in our present livestock law, it was impossible to make the regulation properly effective. It is therefore urged that the Legislature amend the present statute so as to give the Department sufficient power to undertake the eradication of

Rabies. A new livestock sanitary law, containing special provision in reference to Rabies, will be offered.

The following is a list of the principal diseases investigated by the Department:

Tuberculosis
Glanders
Cholera
Rabies
Keratitis
Phtheriosis (Lice)
Mastitis (Contagious)
Actininomycosis
Pyaemia
Enteritis
Tinea tonsurans (Ringworm)
Forage Poisoning

INSPECTIONS.

Hogs—663 head, 553 of which were infected with Cholera.
Horses—1,810 head tested for Glanders.
Cattle—6,818 head were examined; 6,562 received the tuberculin test.

Paid blight-crew working under the direction of an Inspector, cutting and disinfecting for blight in an orchard where the renter was disinterested and did not comply with the Inspector's notice. This work was done under authority of Sections 3098 and 3099, R. & B.

Note the equipment carried by each man; also manner of disinfecting.

Showing crew burning diseased branches following the work of the paid blight-crew. Diseased blight prunings are a source of infection and should be burned each day.

REPORT OF THE HORTICULTURAL DIVISION

Honorable H. T. Graves, Acting Commissioner of Agriculture, Olympia, Wash.

DEAR SIR: In summing up the operations of the Horticultural Division for the past year the following lines of activity constitute the major part of the work:

The inspection of California potato shipments for tuber moth, the inspection of fruits and vegetables from California, Hawaiian Islands, Florida and Japan, inspection of fruit shipments within the state, the inspection of nursery stock grown in nurseries in the state, the inspection of nursery stock shipped in from nurseries of other states, inspection of nursery stock including deciduous and evergreen trees, shrubs, vines, cuttings, roots and plants imported from foreign countries, the inspection of orchards of which by far the greater part of the work is of an advisory nature as to the best and proper methods for controlling insect, fungous, or bacterial diseases as the case may be, the inspection of orchards for law enforcement of community interest, the carrying out of practical orchard spraying experiments with growers to test relative efficiency of spray materials, the placing of codling moth breeding cages and observing closely for most effective spray dates, the holding of orchard demonstration meetings, and the organization of Fruit Protective Associations to promote better and more uniform use of recognized methods for control of pear blight, etc.

INSPECTION OF FRUITS AND VEGETABLES.

In the cities of the state and especially along the commission rows and docks the inspection of imported fruits and vegetables is an important part of the inspector's work when it is known that during the season 1913, 3,389 cars of fruits were shipped into Seattle in addition to 3,272 cars of vegetables, and that during the same period 246 cars of fruit and 98 cars of vegetables were shipped into Tacoma. As a part of these shipments it is interesting to note that bananas, grapefruit, lemons and oranges constitute 1,033 cars of the fruit imports to Seattle and Tacoma, and that bananas, Jap oranges, and Sicilian lemons and grapefruit must be fumigated by our inspectors and that it was necessary to fumigate 86 cars of these fruits in Seattle.

In the fruit producing districts of the state the inspection of fruit shipments is important but is rather insignificant when a comparison is made to the necessary work of the horticultural inspectors in the orchards as advisory agents.

The objects of fruit inspection as we interpret them are two-fold: First, to prevent the introduction of new and serious pests and diseases, and second, to prevent the shipping out of infected fruit and thereby maintain the enviable reputation for good fruit and retain the commercial advantage over states where there is little attempt made to guarantee the package.

The various fruit growers' unions and associations throughout the state have done much for the state as a whole by marketing their fruit under strict rules regulating grade, pack and freedom from pests. In many cases independent shippers are willing to handle infected fruit regardless of its effect on the welfare of those growers who put up a reliable grade of fruit. For this reason it is necessary that our horticultural inspectors inspect outgoing fruit shipments, and the work of doing it is both tedious and extensive.

INSPECTION OF CALIFORNIA POTATOES.

Early potatoes were shipped in quantity from California during the season 1913, arriving by rail at Seattle, South Bend, Raymond and Tacoma, and by boat at Seattle, Tacoma, Aberdeen, Hoquiam, South Bend and Raymond.

The shipments from California to these points in 1913 amounted to 243 cars, of which 204 cars were shipped directly to Seattle. It is the presence of two serious potato pests, tuber moth and eel worm, not uncommonly found in potatoes from California, that have heaped additional work and responsibility on the Horticultural Division, and it has been necessary to burn several shipments to prevent the introduction of the pest into this state. Early in July, 1913, two carloads of infested potatoes were returned to the shipper on account of infestation of tuber moth.

On opening the cars it was found that the percentage of infection averaged 24 larvae per sack of potatoes, about 93 per cent of the tuber moth found being in the larval or worm stage. The remainder were in the chrysalis and adult stages. Their small silky cocoons were in evidence on potato sacks and in the borings. All smaller shipments shipped by boat to Seattle which were found to be infested with the potato tuber moth were promptly burned.

The eggs of the tuber moth hatch in seven to fourteen days, depending on temperature conditions. The new larva is less than one-sixteenth of an inch in length, but is about three-fourths of an inch in length when full grown.

When ready to pupate the larva spends two or three days spinning its silky cocoon. It shortens in length in changing into the chrysalis or pupa stage, and rests three to five weeks before emerging as an adult moth. The moths are then capable of laying many eggs, which make it possible for the life cycle to be repeated.

The young larva varies from a white to a pale pink in color and has a noticeably black head. The adult moths are gray in color with bodies more or less silvery gray. They are about three-eighths to half an inch in length.

As a precaution to protect the potato growers of this state and a warning to the California potato shippers, a letter has been issued from this office stating that hereafter all shipments of potatoes found to be infested with the potato tuber moth (Phthorimaea operculella Zeller) will be burned.

The seriousness of this pest, if it should ever become established in the potato fields of our state and the difficulty of eradicating it, are so great that too much attention cannot be directed to it. At this time our inspectors are carefully inspecting all shipments of potatoes and dealing with them in the way a serious menace should be dealt with.

Owing to the strict enforcement by Department inspectors of the regulations issued by this office April 11, 1914, the California shippers have been very much more careful in their shipments and fewer condemnations have been necessary during May and June, 1914.

NEW POTATO SHIPMENTS.

To one who has been a careful observer of the tuber moth situation it would seem that there are two courses to pursue, and either of which could be so operated with the co-operation of the potato growers to protect the industry of this state against the introduction of tuber moth; first, an absolute quarantine against potatoes from infested districts, and second, the growing of sufficient quantity of early potatoes by the early valleys of the state such as Walla Walla and Columbia River valleys and thus bridge over the ordinary space between old potatoes and the average entry of the new crop, making it unnecessary to ship new potatoes up from California to exceed a period of three weeks and longer endanger our crops to possible introduction of these pests.

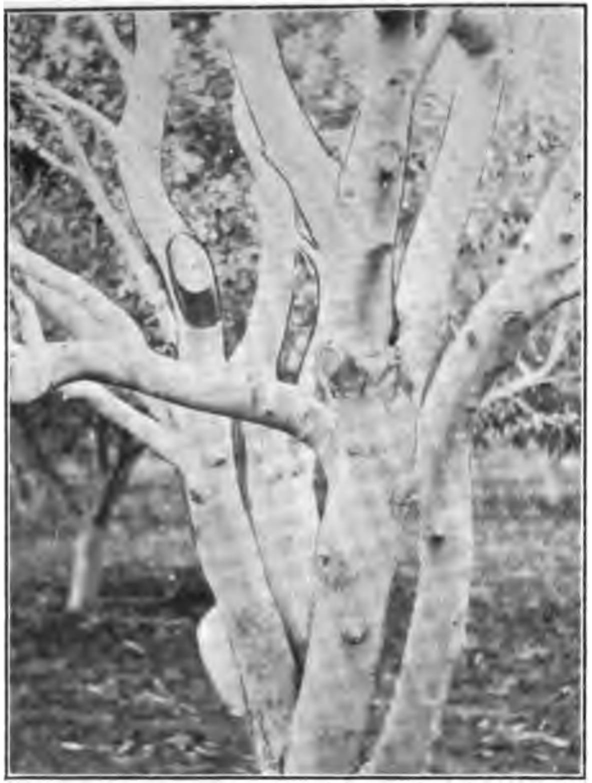
To obtain data on this latter course a questionnaire on new potatoes was mailed to the different inspectors early in June, 1914, and it was found that Walla Walla growers could this season supply two cars of new potatoes by June 15th, and that Kennewick, Hanford, Richland and White Bluffs could also supply new potatoes for a few carloads June 15th, but as early as June 8th had made crate shipments. In practically all of these districts the quantity of early potatoes was small by reason of the very small planting of the early varieties.

During the period May 15th to June 1, 1914, the port of Seattle received 7,252 sacks of California potatoes and for the period June 1st to June 15th, 7,615 sacks; and according to former seasons July shipments from California will far exceed either May or June shipments. The Department earnestly calls these facts to the attention of the farmers of the early valleys of this state for two reasons—first, that our markets may be supplied with clean new potatoes and make it unnecessary to ship in potatoes from doubtful districts, and second, it will be profitable to the farmer and relieve our inspectors of responsibility attached to inspections of California potatoes.

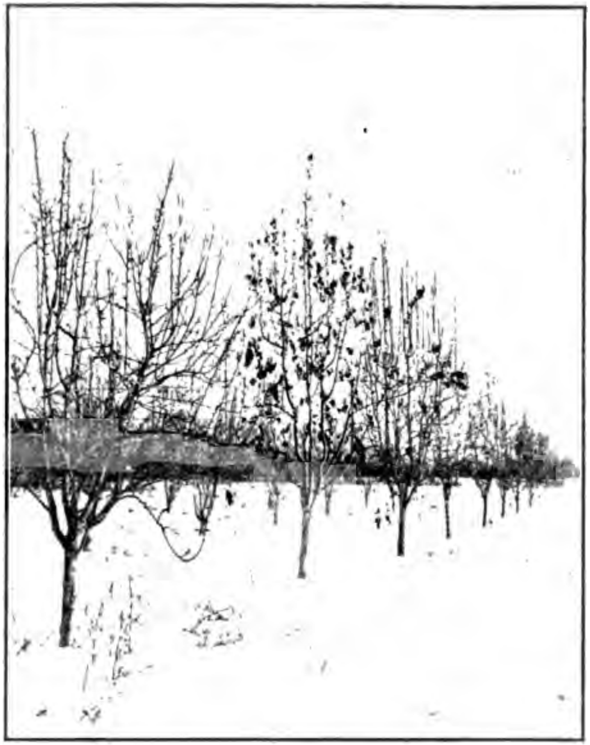
INSPECTION OF NURSERIES AND NURSERY STOCK.

During the fall, winter and spring, comprising approximately the period October 10th to May 15th, a great amount of nursery inspection is done. Nurseries having closed packing houses practice making nursery shipments right along during winter months and the majority demand inspection and certification of each shipment. Our police powers empower inspectors to examine all nursery stock and destroy all trees not capable of disinfection. Thousands of nursery trees were condemned and destroyed by our inspectors during the past season on account of crown gall, fleshy root, hairy root, wooly aphis, borers, cankers, etc. In local nurseries we attempt as far as possible to make inspections at digging time and before trees go into "healing-in" trenches. However, it requires frequent visits to the nurseries as many of them dig only as trees are needed to fill orders.

The number of licensed nurseries is less than that for a year or two ago due to an over-production of some varieties, and to the former practice of farmers growing nursery stock as a side issue. The list is now practically simmered down to the commercial nurserymen and even for the commercial nursery the slump of two years ago in the price of nursery stock is anything but encouraging. Regardless of the fact that many small nurseries have gone out of business we must acknowledge that the nursery industry of this state is yet very important. From fifty to one hundred cars annually of nursery stock grown in nurseries of the state are shipped out to wholesale and retail nurseries of the other states including Oregon, California, Montana and Idaho. The nursery stock production for the state will appear elsewhere in this report. Following is a report of nursery stock planted in the counties of the state Spring 1913, Fall 1913 and Spring 1914:



Heroic tree-surgery in this case saved the large branch. To have allowed the diseased branch to remain in the tree would have meant the loss of the tree in a few weeks.



Trees killed by blight ordinarily carry the blackened dead leaves until they are broken off by the wind. The tree with the black leaves was killed by pear blight; the other trees are free of the disease and dropped their foliage in the fall as all normal conditioned trees should. Proper and careful attention would have saved the loss of this tree had it been attended to in the early stages of the disease.

NURSERY STOCK PLANTED AS SHOWN BY NURSERY REPORTS—SPRING, 1913.

D—Domestic or Washington grown. F—Foreign or grown outside the state.

COUNTY		Apples	Pears	Peaches	Plums Prunes	Cots	Cherries	Quinces	Nuts
Adams	D	836	61	30	71	37	152	1	6
	F	270	56	52	108	16	116	....	82
Asotin	D	312	82	86	12	....	....	....	....
	F	35	18	154	16	33	49	....	12
Benton	D	5,245	731	33	61	112	30	3	12
	F	866	187	33	56	5	41	....	47
Chehalis	D	60	13	....	11	....	15	....	....
	F	729	1,262	39	108	3	172	3	7
Chelan	D	57,463	10,238	574	1,030	14	512	28	552
	F	1,759	29	32	26	10	40	3	11
Clallam	D	24	4	1	2	....	3	2	....
	F	22	6	6	6	2	5	2	6
Clarke	D	307	270	294	2,410	6	45	3	583
	F	1,368	2,477	260	698	8	511	18	335
Columbia	D	38	20	14	16	796	9	....	....
	F	776	21	69	15	6	180	4	16
Cowlitz	D	467	252	98	37	4	153	4	39
	F	383	146	81	115	2	276	4	13
Douglas	D	20,850	738	1,453	390	29	278	5	35
	F	862	142	9	47	101	209	....	....
Ferry	D	528	95	14	184	1	60	....	4
	F	3,549	319	98	1,438	27	637	105	1
Franklin	D	152	14	31	22	2,662	34	1	2
	F	8	....	....	4	....	4	....	4
Garfield	D	6	10	2	1	1	17	....	6
	F	78	20	42	4	18	10	5	....
Grant	D	120,154	7,808	2,078	1,230	2,662	2,574	42	180
	F	1,127	61	117	140	59	113	1	16
Island	D	406	65	12	249	....	152	1	2
	F	219	51	13	80	....	98	....	3
Jefferson	D	2	2	....	2	....	2	....	2
	F	45	102	....	20	2	8	....	11
King	D	856	579	41	224	1,009	555	15	20
	F	1,240	3,158	134	314	3	3,794	13	197
Kitsap	D	245	27	10	42	....	69	1	....
	F	177	28	27	26	2	98	7	19
Kittitas	D	1,550	106	20	90	257	89	2	2
	F	2,030	1,564	86	277	21	463	5	11
Klickitat	D	5,510	54	91	6	29	33	....	10
	F	11,898	849	747	468	298	424	20	564
Lewis	D	474	178	49	92	....	316	1	44
	F	1,057	360	78	144	9	1,067	14	14
Lincoln	D	2,672	998	252	206	92	598	6	17
	F	432	508	110	83	59	106	5	17
Mason	D	39	3	....	21	6	10	....	2
	F	199	22	23	13	....	13	....	100
Okanogan	D	107,904	11,461	2,109	3,485	3,050	1,837	122	157
	F	5,522	464	506	721	390	1,092	28	40
Pacific	D	102	29	5	15	....	77	5	....
	F	666	62	14	83	1	74	7	58
Pend Oreille ..	D	2,360	152	31	167	....	162	3	....
	F	90	43	8	33	....	17	2	13
Pierce	D	2,061	645	98	438	48	1,142	16	3
	F	1,175	1,061	177	375	6	1,126	119	95
San Juan	D	42	48	1	12	....	18	2	....
	F	48	276	....	....	2	7	....	2
Skagit	D	754	333	63	221	6	462	12	6
	F	138	51	13	47	3	71	1	14
Skamania	D	1,125	8	18	491	....	19	....	88
	F	1,016	794	68	17	53	26	3	14
Snohomish	D	1,069	391	64	320	5	298	305	1
	F	1,101	3,695	42	362	4	447	18	28
Spokane	D	43,578	1,907	627	402	390	1,501	43	112
	F	7,632	552	773	679	47	1,658	34	59
Stevens	D	51,168	702	1,078	612	145	497	12	24
	F	1,198	178	182	210	33	225	15	22
Thurston	D	323	1,440	54	29	....	57	2	....
	F	1,218	3,412	33	152	30	3,090	20	49
Wahkiakum ..	D	....	....	....	....	....	....	....	....
	F	34	10	....	10	....	6	1	....
Walla Walla...	D	188	21	27	81	18	8	7	....
	F	1,842	140	278	196	25	340	8	16
Whatcom	D	2,857	2,328	129	489	35	1,174	20	50
	F	522	205	33	73	6	298	3	31
Whitman	D	3,660	872	664	1,084	35	572	....	6
	F	236	198	155	55	42	107	54	20
Yakima	D	158,662	31,460	5,772	11,702	634	2,246	2	13
	F	77,583	26,278	137	17,282	37	23,127	113	328
Totals..........		723,199	122,950	20,486	50,337	13,441	55,911	1,301	4,285

NURSERY STOCK PLANTED—SPRING, 1918.—Concluded.

D—Domestic or Washington grown. F—Foreign or grown outside the state.

COUNTY		Grapes	Raspberries	Blackberries	Strawberries	Berries	Roots	Trees	Shrubs
Adams	D	50	....	282	364	96	62	325	237
	F	53	488	25	445	124	216	140	113
Asotin	D	....	....	....	....	....	....	....	....
	F	....	110	62	....	26	....	14	26
Benton	D	93	38	24	250	....	....	38	135
	F	322	209	15	31,235	88	244	473	530
Chehalis	D	....	28	2	....	9	....	7	12
	F	17	104	596	4,192	56	114	351	2,216
Chelan	D	1,009	230	139	1,099	24	....	447	440
	F	17	138	24	12,705	22	303	320	1,301
Clallam	D	1	1	....	150	6	....	....	20
	F	3	19	2	535	2	30	61	620
Clarke	D	22	63	17	55	8	....	4	36
	F	522	1,795	240	9,469	780	294	342	762
Columbia	D	6	6	2	38	32	....	8	21
	F	78	....	221	1,750	....	....	28	845
Cowlitz	D	23	6	15	312	111	2,960	....	52
	F	46	376	58	1,118	377	92	216	310
Douglas	D	139	49	24	266	40	....	817	231
	F	16	78	110	524	10	2	269	78
Ferry	D	19	22	33	224	68	....	10	85
	F	94	1,135	351	23,924	2	....	156	1,173
Franklin	D	38	12	25	87	....	....	78	32
	F	4	24	4	320	4	54	1,610	36
Garfield	D	4	....	10	100	6	....	6	4
	F	12	61	25	3,200	50	....	36	215
Grant	D	4,950	2,168	2,373	6,607	1,192	708	5,240	1,614
	F	109	89	29	1,326	347	352	182	96
Island	D	9	96	71	4,309	95	....	2	37
	F	7	86	54	....	....	....	4	53
Jefferson	D	2	....	926	....	6	....	....	....
	F	17	36	6	695	34	110	88	42
King	D	24	155	138	1,823	678	67	804	8,689
	F	61	338	149	46,075	82	3,463	2,237	10,489
Kitsap	D	6	12	44	312	46	24	2	690
	F	13	66	16	760	81	27	55	206
Kittitas	D	22	66	42	72	335	112	21	96
	F	27	205	214	4,744	6	54	1,069	773
Klickitat	D	62	12	0	....	94	....	....	....
	F	513	180	978	4,270	630	27	130	1,857
Lewis	D	32	8	158	1,416	272	6	18	419
	F	16	167	729	18,555	254	250	212	1,520
Lincoln	D	284	310	188	168	101	208	258	989
	F	81	137	17	876	39	414	304	102
Mason	D	2	2	7	....	18	....	....	11
	F	3	....	28	6,148	13	10	102	6
Okanogan	D	2,392	305	497	1,854	283	85	285	539
	F	170	335	297	12,296	73	....	304	788
Pacific	D	202	24	299	....	....	....	1	16
	F	18	373	571	4,084	187	920	117	671
Pend Oreille ..	D	46	241	57	100	34	2	18	31
	F	6	60	10	2,480	113	193	130	57
Pierce	D	50	250	148	200	291	2	85	1,873
	F	614	301	1,575	7,923	165	2,875	684	8,099
San Juan	D	....	36	18	....	40	24	12	113
	F	2	48	5	410	16	143	58	45
Skagit	D	24	2,236	432	6,862	121	84	193	2,715
	F	21	111	17	2,620	113	208	134	14,826
Skamania	D	214	....	12	....	100	....	....	....
	F	41	101	83	500	571	150	6	278
Snohomish	D	13	166	257	6,161	129	....	8	507
	F	59	117	177	16,089	206	386	226	1,480
Spokane	D	182	422	236	550	11,151	3,211	648	722
	F	268	630	908	29,327	301	680	1,379	5,412
Stevens	D	700	368	373	2,859	216	....	117	187
	F	205	275	147	14,011	14	247	168	257
Thurston	D	4	....	....	....	224	....	....	9
	F	55	151	786	2,427	220	370	274	725
Wahkiakum ..	D	....	....	....	....	....	....	....	....
	F	....	18	5	400	31	....	100	15
Walla Walla...	D	101	4	142	....	350	200	27	454
	F	363	131	94	2,670	17	33	497	1,758
Whatcom	D	27	7,102	2,694	13,397	118	....	113	360
	F	41	217	225	10,175	67	468	398	1,534
Whitman	D	969	1,384	128	2,057	82	156	217	344
	F	223	323	97	5,255	102	81	170	251
Yakima	D	225	....	924	25,000	....	....	2,103	812
	F	285	488	121	27,615	610	1,073	1,494	4,670
Totals..........		16,348	26,341	19,764	387,790	22,138	21,724	26,450	86,967

NURSERY STOCK PLANTED AS SHOWN BY NURSERY REPORTS—FALL, 1918.
D—Domestic or Washington grown. F—Foreign or grown outside the state.

COUNTY		Apples	Pears	Peaches	Plums Prunes	Cots	Cherries	Quinces	Nuts
Adams	D	292	70	895	188	187	815	14	7
	F	247	56	390	126	130	287	14	7
Asotin	D	2,000	1,000	1,000	....	500	1,000	....	....
	F	31	7	3	13	....	7	....	4
Benton	D	14,922	1,820	160	5,758	121	221	12	3
	F	133	1,025	112	5,542	11	222	12	2
Chehalis	D	427	1,180	53	482	9	38	6	10
	F	552	126	63	168	1	332	3	24
Chelan	D	152,910	20,855	....	10	....	60	....	....
	F	2,965	8,210	5	19	5	7	1	23
Clallam	D	6	2	....	2	....	6	....	....
	F	30	10	....	9	....	18	1	2
Clarke	D	358	127	44	491	11	144	21	43
	F	1,910	2,007	640	8,346	73	753	29	272
Columbia	D	....	....	....	....	....	....	....	....
	F	203	38	336	40	24	50	2	9
Cowlitz	D	328	269	206	155	70	282	6	84
	F	525	51	37	93	20	108	6	22
Douglas	D	719	75	86	47	46	216	....	....
	F	2	....	....	2	....	....	....	....
Ferry	D	4	2	4	6	....	....	....	....
	F	4	....	3	4	....	6	2	....
Franklin	D	17	8	9	2	7	24	....	2
	F	57	2	2	2	54	8	....	....
Garfield	D	....	5,000	....	6	1	....	....	....
	F	12	....	....	8	1	....	....	8
Grant :.........	D	14,413	807	268	1,401	106	207	....	....
	F	10	....	....	7	....	4	....	3
Island	D	50	29	34	35	2	96	1	3
	F	389	96	19	126	4	138	2	12
Jefferson	D	....	....	....	....	....	....	....	....
	F	14	8	....	3	....	....	....	7
King	D	8,187	4,826	685	3,810	799	4,986	90	36
	F	2,668	970	820	1,187	108	2,895	27	79
Kitsap	D	581	174	44	148	23	245	28	8
	F	786	85	64	208	4	377	24	43
Kittitas	D	....	248	46	72	10	120	....	....
	F	52	....	10	17	....	100	7	8
Klickitat	D	480	402	63	982	110	64	....	430
	F	3,999	812	54	14	350	32	1	180
Lewis	D	1,814	862	227	963	707	711	2	....
	F	1,446	418	6	432	13	1,572	65	40
Lincoln	D	112	29	11	25	15	46	9	1
	F	62	....	....	....	....	14	6	....
Mason	D	232	45	30	53	....	57	15	1
	F	56	95	2	....	....	....	....	....
Okanogan	D	8,403	1,999	496	859	458	917	....	8
	F	2,028	....	....	6	1	....	....	8
Pacific	D	488	83	9	212	1	158	10	32
	F	7	2	....	2	....	8	....	18
Pend Oreille ..	D	5	3	....	....	....	4	....	....
	F	22	18	....	12	....	12	....	....
Pierce	D	1,380	1,653	65	5,683	12	2,084	88	7
	F	2,220	769	668	1,628	415	1,841	94	161
San Juan	D	89	15	11	23	12	120	1	2
	F	....	....	....	....	....	....	....	....
Skagit	D	838	484	58	444	8	734	18	12
	F	293	211	9	170	....	252	12	64
Skamania	D	279	2	....	2	2	2	....	....
	F	290	56	148	1	....	3,192	10	....
Snohomish	D	1,311	369	107	439	13	976	33	37
	F	1,059	1,283	36	323	1	992	11	141
Spokane	D	16,794	1,833	391	214	76	2,438	86	20
	F	5,399	1,035	340	40	50	2,196	60	16
Stevens	D	2,912	71	204	35	4	34	2	4
	F	12	....	....	7	....	6	....	4
Thurston	D	498	3,186	26	504	11	420	4	10
	F	638	260	23	316	4	413	4	22
Wahkiakum ...	D	....	....	....	....	....	....	....	....
	F	....	....	....	....	....	....	....	....
Walla Walla...	D	314	194	50	78	17	183	6	65
	F	676	79	326	5,695	38	102	6	10
Whatcom	D	1,200	3,338	154	247	7	813	17	5
	F	902	420	37	214	7	1,079	13	92
Whitman	D	1,008	63	31	67	38	144	6	5
	F	1,049	5,243	384	170	167	524	8	3
Yakima	D	40,939	14,671	66	....	144	158	....	....
	F	1,104	30	34	740	375	3,194	40	97
Totals..........		306,182	142,880	9,532	48,963	5,278	38,759	990	2,221

NURSERY STOCK PLANTED—FALL, 1918.—Concluded.

D—Domestic or Washington grown. F—Foreign or grown outside the state.

COUNTY		Grapes	Raspberries	Blackberries	Strawberries	Berries	Roots	Trees	Shrubs
Adams	D	116	53	16	350	146	68	359	275
	F	104	50	....	....	146	33	219	27
Asotin	D	....	....	....	....	....	....	....	....
	F	....	....	....	12	....	....	20	....
Benton	D	480	....	6	100	150	....	64	210
	F	2	10	10	1,110	52	1	22	12
Chehalis	D	10	99	179	1,649	162	172	462	3,236
	F	24	318	703	4,884	28	54	198	740
Chelan	D	....	....	....	1,000	24	....	....	....
	F	13	112	62	360	22	172	140	114
Clallam	D	....	6	....	....	....	....	....	....
	F	....	3	12	....	....	....	2	37
Clarke	D	278	....	....	24	100	....	25	1,449
	F	1,046	719	290	4,203	1,072	329	202	910
Columbia	D	26	....	....	....	290	....	57	....
	F	15	266	....	....	....	....	22	10
Cowlitz	D	611	224	107	....	2,783	....	5	10
	F	20	206	34	1,634	52	54	69	69
Douglas	D	....	....	....	....	....	....	8	4
	F	....	2	1	42	....	....	27	4
Ferry	D	....	....	....	....	8	....	....	66
	F	....	....	....	....	....	....	....	66
Franklin	D	7	....	4	....	....	....	6	208
	F	....	8	1	....	....	....	1	31
Garfield	D	....	....	....	12	....	....	1	2
	F	....	....	....	....	....	54	....	....
Grant	D	81	18	3	50	2,428	....	244	210
	F	2	15	3	205	6	81	31	15
Island	D	10	12	2	1,100	110	6	11	1,289
	F	18	62	7	1,109	58	100	42	150
Jefferson	D	....	....	....	....	....	....	....	....
	F	8	20	....	100	4	29	22	16
King	D	471	448	102	4,300	807	....	445	2,937
	F	100	377	1,437	410	36	3,569	3,720	5,149
Kitsap	D	27	10	56	....	425	12	17	88
	F	52	57	226	352	26	....	57	139
Kittitas	D	8	48	28	....	742	....	153	148
	F	4	46	56	100	8	56	45	26
Klickitat	D	32	38	18	....	76	89	58	703
	F	44	22	12	500	4	29	37	836
Lewis	D	36	36	251	500	127	....	14	112
	F	190	1,012	519	3,651	661	115	309	1,566
Lincoln	D	62	72	20	880	....	....	19	125
	F	....	....	....	....	....	....	....	237
Mason	D	10	....	....	1,148	78	12	6	16
	F	....	12	12	5,000	50	6	96	18
Okanogan	D	4	40	....	....	8	54	44	20
	F	4	40	....	....	8	54	44	20
Pacific	D	60	898	64	1,071	760	214	65	565
	F	....	54	24	66	99	74	16	120
Pend Oreille ...	D	3	24	7	100	....	....	3	33
	F	174	24	....	....	....	....	....	898
Pierce	D	95	147	298	2,082	219	12	2,840	13,060
	F	....	2,309	2,824	2,650	1,557	151	676	3,070
San Juan	D	4	79	43	1,069	151	100	20	163
	F	....	....	....	....	....	....	....	....
Skagit	D	18	4,579	1,159	3,951	451	68	330	3,965
	F	56	163	18	5,362	355	108	467	1,191
Skamania	D	....	....	....	....	....	....	....	....
	F	....	....	....	....	....	....	16	20
Snohomish	D	39	239	55	2,450	828	442	364	2,112
	F	30	786	168	10,700	158	116	573	1,171
Spokane	D	620	598	84	229	383	331	1,274	3,401
	F	63	114	4	229	20	162	1,088	3,283
Stevens	D	6	170	....	....	4	29	32	18
	F	2	170	....	....	4	29	32	18
Thurston	D	4	112	462	8,477	115	....	7	323
	F	15	259	89	10,600	272	149	85	339
Wahkiakum ...	D	....	....	....	....	....	....	....	....
	F	....	....	....	....	....	....	....	....
Walla Walla...	D	101	5,325	150	730	128	....	147	356
	F	7,344	343	161	5,700	289	....	105	1,517
Whatcom	D	645	3,774	861	51,412	1,529	....	89	459
	F	19	1,379	362	1,400	234	48	218	1,446
Whitman	D	32	75	280	700	35	....	120	168
	F	256	561	384	1,807	100	28	347	759
Yakima	D	....	1,746	2,683	2,000	3,812	....	398	225
	F	175	198	865	350	4,100	165	185	798
Totals..........		18,685	28,587	15,272	148,510	26,292	7,374	16,820	60,782

NURSERY STOCK PLANTED AS SHOWN BY NURSERY REPORTS—SPRING, 1914.
D—Domestic or Washington grown. F—Foreign or grown outside the state.

COUNTY		Apples	Pears	Peaches	Plums Prunes	Cots	Cherries	Quinces	Nuts
Adams	D	510	35	20	30	12	57	3	7
	F	139	19	104	60	18	106	5	23
Asotin	D	500	100	200	50	30	30	10	....
	F	81	167	17	51	25	83	5	28
Benton	D	12,083	2,752	648	1,998	227	557	46	89
	F	177	83	430	33	30	194	30	64
Chehalis	D	12	1	....	....	....	3	....	2
	F	525	134	32	73	5	106	13	62
Chelan	D	116,776	19,738	558	2,558	7,861	2,066	99	72
	F	12,090	4,192	817	212	1,110	336	36	19
Clallam	D	143	109	....	66	2	73	5	4
	F	36	22	....	....	2	18	....	....
Clarke	D	341	68	1,094	22,238	....	58	4	59
	F	710	215	92	602	6	130	5	483
Columbia	D	....	....	....	....	....	....	....	....
	F	76	16	65	5	8	14	4	22
Cowlitz	D	173	84	20	52	13	68	5	36
	F	352	121	28	44	2	62	5	44
Douglas	D	17,495	1,965	226	673	2,202	260	25	15
	F	983	163	24	48	26	248	4	8
Ferry	D	77	35	....	18	....	44	....	....
	F	5,121	434	120	843	31	1,338	185	14
Franklin	D	485	16	6	10	2	13	....	53
	F	808	12	47	4	12	33	27	9
Garfield	D	1,002	268	197	77	96	235	4	6
	F	144	21	35	29	8	38	1	4
Grant	D	62,532	1,484	560	538	929	1,281	53	117
	F	1,428	78	137	131	50	187	6	172
Island	D	645	145	23	76	3	230	7	4
	F	70	23	10	27	11	122	3	6
Jefferson	D	246	19	3	48	....	76	....	1
	F	34	16	....	....	....	5	....	....
King	D	9,897	2,674	371	1,444	64	3,681	151	186
	F	376	75	41	190	31	394	3	30
Kitsap	D	362	163	75	142	12	163	27	26
	F	46	7	5	11	4	14	1	....
Kittitas	D	550	208	28	97	57	29	6	1
	F	933	181	122	152	34	280	6	15
Klickitat	D	18,288	1,719	278	2,093	72	329	65	25
	F	7,920	1,295	149	202	517	281	16	377
Lewis	D	843	717	67	357	45	179	25	163
	F	1,034	332	139	193	56	436	13	58
Lincoln	D	1,625	530	93	149	50	214	6	14
	F	478	192	82	93	117	103	1	27
Mason	D	414	52	3	63	....	88	4	1
	F	79	7	2	309	8	15	....	....
Okanogan	D	85,313	8,072	768	1,339	3,242	1,396	98	188
	F	10,554	1,072	1,301	1,411	345	3,104	191	107
Pacific	D	102	47	4	8	....	23	2	1
	F	79	30	23	30	....	52	....	8
Pend Oreille ...	D	310	25	13	38	4	62	....	....
	F	197	8	20	42	20	27	1	10
Pierce	D	1,620	660	162	308	28	1,413	45	80
	F	671	409	44	154	....	360	49	83
San Juan	D	35	1,383	5	12	2	17	....	4
	F	16	112	8	3	....	32	1	1
Skagit	D	1,286	490	88	242	22	585	45	52
	F	368	195	23	306	11	334	11	18
Skamania	D	509	3	....	....	....	....	....	50
	F	380	216	47	14	....	11	....	12
Snohomish	D	5,001	885	129	792	29	671	54	44
	F	864	304	20	302	4	285	12	32
Spokane	D	49,510	2,233	980	1,487	310	2,027	54	192
	F	9,623	1,632	692	691	380	1,440	66	109
Stevens	D	38,209	1,008	127	202	46	254	10	20
	F	914	150	240	179	56	299	15	48
Thurston	D	178	1,058	15	66	2	418	1	11
	F	584	2,012	28	85	13	983	7	46
Wahkiakum ...	D	30	4	12	4	2	12	2	2
	F	13	11	....	5	....	2	....	....
Walla Walla...	D	3,000	104	104	11	2	69	1	....
	F	5,460	1,188	958	871	580	674	16	107
Whatcom	D	1,189	7,018	150	347	55	1,094	432	52
	F	489	5,078	17	126	3	293	3	23
Whitman	D	979	862	142	835	63	658	21	22
	F	448	61	197	405	28	127	6	477
Yakima	D	55,576	17,260	334	4,452	126	1,179	....	175
	F	3,807	6,442	308	540	1	3,316	12	208
Totals..........		555,962	100,659	13,417	51,381	19,162	35,389	2,069	4,428

NURSERY STOCK PLANTED—SPRING, 1914.—Concluded.

D—Domestic or Washington grown. F—Foreign or grown outside the state.

COUNTY		Grapes	Rasp-berries	Black-berries	Straw-berries	Berries	Roots	Trees	Shrubs
Adams	D	15	27	7	....	100	182	181	576
	F	42	20	18	1,100	57	9	82	88
Asotin	D	....	....	....	....	....	....	....	....
	F	74	64	64	3,500	....	....	88	84
Benton	D	7,387	434	2	10,500	90	5,490	71	1,362
	F	8,211	6	48	68,075	427	2	3,224	113
Chehalis	D	....	....	12	....	48	18	226	212
	F	28	356	74	2,110	254	169	156	561
Chelan	D	788	498	748	602	24	1,586	889	1,621
	F	4,134	320	88	16,850	79	1,443	798	482
Clallam	D	2	25	41	722	94	16	17	84
	F	1	....	....	2,850	2	....	9	18
Clarke	D	124	68	149	....	37	24	....	20
	F	813	140	61	10,006	141	207	139	846
Columbia	D	....	....	....	....	....	....	....	....
	F	7	50	46	1,550	9	44	24	466
Cowlitz	D	24	24	18	600	127	242	24	120
	F	84	25	49	1,914	95	184	228	428
Douglas	D	143	49	45	1,645	66	86	948	378
	F	28	10	....	9,225	8	88	127	94
Ferry	D	1	12	24	50	24	18	26	87
	F	150	808	516	17,384	....	44	285	1,437
Franklin	D	42	....	50	....	....	....	....	12
	F	51	24	3	200	9	....	168	3
Garfield	D	70	82	108	750	....	....	84	124
	F	61	14	21	210	4	27	9	65
Grant	D	5,318	831	89	288	41	....	2,153	1,043
	F	314	184	59	8,925	69	385	532	312
Island	D	52	350	123	700	9	....	16	105
	F	12	24	....	725	....	....	....	26
Jefferson	D	15	100	54	500	....	....	....	14
	F	....	100	100	1,325	4	....	3	123
King	D	441	3,809	1,678	33,306	3,918	2,224	1,606	9,689
	F	37	216	268	9,214	166	351	130	1,916
Kitsap	D	56	362	332	1,150	375	108	85	1,347
	F	6	15	154	3,950	17	57	2	50
Kittitas	D	3	30	42	500	20	....	18	71
	F	34	330	272	5,663	81	5,318	2,668	618
Klickitat	D	395	112	172	5,006	143	29	74	88
	F	231	91	634	65,163	116	105	135	220
Lewis	D	16	164	21	500	687	10	27	1,446
	F	56	297	1,374	9,948	867	442	92	965
Lincoln	D	172	170	22	100	149	72	795	746
	F	132	104	22	13,539	21	201	52	138
Mason	D	9	....	....	100	124	17	8	1
	F	....	....	....	500	6	6	146	46
Okanogan	D	1,362	268	178	2,106	3	108	717	550
	F	340	397	564	15,046	705	22	894	1,125
Pacific	D	....	102	6	50	6	6	2	3
	F	38	77	70	3,450	36	58	22	277
Pend Oreille ..	D	32	1	27	....	239	19	36	49
	F	4	47	10	1,762	40	213	4	20
Pierce	D	146	2,835	312	6,523	3,624	13,650	1,029	13,606
	F	165	134	1,367	16,727	30	244	262	1,054
San Juan	D	16	40	36	102	50	12	13	37
	F	....	48	48	3,525	18	6	12	24
Skagit	D	16	706	114	4,500	152	161	60	1,890
	F	23	4,954	1,664	9,650	21	57	359	5,125
Skamania	D	....	....	....	....	12	....	....	....
	F	56	17	10	1,775	6	4	1,000	56
Snohomish	D	57	719	393	3,062	784	139	80	584
	F	37	151	112	8,854	332	245	292	1,450
Spokane	D	1,108	1,120	272	9,650	1,888	1,933	1,949	5,392
	F	287	506	705	60,626	289	598	2,085	4,013
Stevens	D	132	116	58	2,409	10	387	335	700
	F	126	414	147	12,846	73	212	120	217
Thurston	D	12	12	6	....	10	....	6	168
	F	44	265	474	4,343	37	175	71	203
Wahkiakum ...	D	12	12	6	....	10	....	....	1
	F	....	10	....	100	6	....	....	....
Walla Walla...	D	500	250	200	....	6,000	....	402	7,154
	F	484	508	225	20,410	68	56	550	640
Whatcom	D	74	64,329	2,509	56,000	5,908	64	108	614
	F	86	177	3,436	17,076	30	197	228	1,908
Whitman	D	185	256	132	2,550	251	61	1,178	459
	F	591	717	582	6,576	114	379	1,533	147
Yakima	D	508	....	10	800	....	....	200	2,008
	F	1,145	576	31	21,436	224	494	200	1,422
Totals..........		32,145	89,609	21,807	602,399	29,484	38,649	30,537	79,143

Volunteer crew of the Lower Natches Valley Fruit Protective Association. These men are pulling together in the pear blight work and have the community's interest at heart.

Eighteen automobiles filled with business men of North Yakima, Sunnyside and Prosser on a blight inspection tour of the Yakima valley to get in touch with the pear blight situation.

GENERAL REPORT OF INSPECTIONS MADE OF NURSERY STOCK FROM FOREIGN COUNTRIES BY HORTICULTURAL DIVISION, STATE DEPARTMENT OF AGRICULTURE.

In addition to the large amount of nursery stock grown within this state and the large quantity shipped into Washington from outside states the Horticultural Inspectors of our State Department of Agriculture have inspected during the period October 1, 1913, to June 15, 1914, 426 cases of nursery stock containing a total of 808,102 plants grown in foreign countries and destined to Washington points. The attached tabulation of shipments shows the number of cases shipped to the different distributing points and the foreign countries from which they were shipped.

The inspection of these foreign shipments is done under the general supervision and in co-operation with the Federal Horticultural Board, Washington, D. C. To the Horticultural Division of the Department of Agriculture of this state is left the entire responsibility for the inspection at destination of importations of foreign nursery stock into the State of Washington. The Federal Horticultural Board issues permits for the importation of foreign nursery stock and upon its arrival at the port of entry (usually New York, Seattle, Portland or Tacoma) complete information is furnished the Chief of the State Horticultural Division, Olympia, giving the origin, name of importer at port of entry and consignee, quantity and kind of nursery stock, number of cases and marks and numbers on cases.

The Federal Horticultural Board furnishes this information to this office on regular report forms which are also spaced for state inspectors' return report to the Federal Horticultural Board after a very careful inspection has been made by our Inspector. The purpose of rigid inspection of nursery stock from foreign countries is to intercept the various pests likely to be introduced.

The federal act providing for co-operative work between Federal and State Horticultural Inspectors has greatly stimulated the foreign shippers to make a closer inspection of their stock before shipping. The results of this are shown in the general quality of the imported nursery stock and its more general freedom from infestation. However, several serious infestations were intercepted which otherwise might have become a serious menace to our horticultural industry.

On inspection of the above mentioned 426 cases of nursery stock infestation of different kinds were found by our Inspectors as follows:

Dec. 19, 1913.	Shipment of 4 cases of ornamental trees from Japan contained two infestations of Wistaria gall fly.—(Agromyza websteri.)
Jan. 8, 1914.	Shipment of 31 cases of woody plants from Japan contained 85 plants infested with Wistaria gall fly.

NURSERY STOCK PLANTED AS SHOWN BY NURSERY REPORTS—SPRING, 1918.

D—Domestic or Washington grown. F—Foreign or grown outside the state.

COUNTY		Apples	Pears	Peaches	Plums Prunes	Cots	Cherries	Quinces	Nuts
Adams	D	836	61	30	71	37	152	1	6
	F	270	56	52	108	16	116	....	82
Asotin	D	312	82	36	12	....	....	....	....
	F	35	18	154	16	33	49	....	12
Benton	D	5,245	781	33	61	112	30	3	12
	F	866	187	33	55	5	41	....	47
Chehalis	D	60	13	....	11	....	15	....	....
	F	729	1,262	39	108	3	172	3	7
Chelan	D	57,463	10,238	574	1,030	14	512	28	552
	F	1,759	29	32	26	10	40	3	11
Clallam	D	24	4	1	2	....	3	2	....
	F	22	6	6	6	2	5	2	6
Clarke	D	307	270	294	2,410	6	45	3	583
	F	1,368	2,477	260	698	8	511	18	335
Columbia	D	38	20	14	16	796	9	....	....
	F	776	21	69	15	6	180	4	16
Cowlitz	D	467	252	98	87	4	158	4	39
	F	383	146	81	115	2	276	4	13
Douglas	D	20,850	738	1,453	390	29	278	5	35
	F	862	142	9	47	101	209	....	....
Ferry	D	528	95	14	184	1	60	....	4
	F	3,549	819	98	1,438	27	637	105	1
Franklin	D	152	14	31	22	2,662	34	1	2
	F	8	....	....	4	....	4	....	4
Garfield	D	6	10	2	1	1	17	....	6
	F	78	20	42	4	18	10	5	....
Grant	D	120,154	7,806	2,078	1,230	2,662	2,574	42	180
	F	1,127	61	117	140	59	113	1	16
Island	D	406	65	12	249	....	152	1	2
	F	219	51	13	80	....	98	....	3
Jefferson	D	2	2	....	2	....	2	....	2
	F	45	102	....	20	2	8	....	11
King	D	856	579	41	224	1,009	555	15	20
	F	1,240	8,158	134	314	3	8,794	13	197
Kitsap	D	245	27	10	42	....	69	1	....
	F	177	28	27	26	2	98	7	19
Kittitas	D	1,550	106	20	90	257	89	2	2
	F	2,030	1,564	86	277	21	463	5	11
Klickitat	D	5,510	54	91	6	29	33	....	10
	F	11,898	849	747	468	298	424	20	564
Lewis	D	474	178	49	92	....	316	1	44
	F	1,057	360	73	144	9	1,067	14	14
Lincoln	D	2,672	998	252	206	92	598	6	17
	F	432	508	110	83	59	106	5	17
Mason	D	39	8	....	21	6	10	....	2
	F	199	22	23	13	....	13	....	100
Okanogan	D	107,904	11,461	2,109	3,485	3,050	1,837	122	157
	F	5,522	464	506	721	390	1,092	28	40
Pacific	D	102	29	5	15	....	77	5	....
	F	666	62	14	83	1	74	7	58
Pend Oreille	D	2,360	152	31	167	....	162	3	....
	F	90	43	3	33	....	17	2	13
Pierce	D	2,061	645	98	438	48	1,142	16	3
	F	1,175	1,061	177	375	6	1,126	119	95
San Juan	D	42	48	1	12	....	18	2	....
	F	48	276	....	....	2	7	....	2
Skagit	D	754	833	63	221	6	462	12	6
	F	138	51	13	47	3	71	1	14
Skamania	D	1,125	8	18	491	....	19	....	88
	F	1,016	794	68	17	58	26	3	14
Snohomish	D	1,069	391	64	320	5	298	305	1
	F	1,101	3,695	42	362	4	447	18	28
Spokane	D	43,578	1,907	627	402	390	1,501	43	112
	F	7,632	552	773	679	47	1,658	34	59
Stevens	D	51,168	702	1,078	612	145	497	12	24
	F	1,198	178	182	210	83	225	15	22
Thurston	D	823	1,440	54	29	....	57	2	....
	F	1,218	3,412	33	152	30	3,090	20	49
Wahkiakum	D	....	....	....	....	....	....	....	....
	F	34	10	....	10	....	6	1	....
Walla Walla	D	188	21	27	81	18	8	7	....
	F	1,842	140	278	196	25	340	8	16
Whatcom	D	2,857	2,328	129	489	85	1,174	20	50
	F	522	205	33	73	6	293	3	31
Whitman	D	3,660	872	664	1,084	35	572	....	6
	F	236	198	155	55	42	107	54	20
Yakima	D	158,662	31,460	5,772	11,702	634	2,246	2	13
	F	77,588	26,278	137	17,282	37	23,127	113	328
Totals		728,199	122,950	20,496	50,387	13,441	55,911	1,301	4,285

NURSERY STOCK PLANTED—SPRING, 1918.—Concluded.

D—Domestic or Washington grown. F—Foreign or grown outside the state.

COUNTY		Grapes	Raspberries	Blackberries	Strawberries	Berries	Roots	Trees	Shrubs
Adams	D	50	....	282	364	96	62	325	237
	F	53	488	25	445	124	216	140	113
Asotin	D	....	....	....	....	....	....	....	....
	F	....	110	62	....	26	....	14	26
Benton	D	93	38	24	250	....	....	38	135
	F	322	209	15	31,235	88	244	473	530
Chehalis	D	....	28	2	....	9	....	7	12
	F	17	104	596	4,192	56	114	351	2,216
Chelan	D	1,009	230	139	1,099	24	....	447	440
	F	17	138	24	12,705	22	303	320	1,301
Clallam	D	1	1	....	150	6	....	....	20
	F	3	19	2	535	2	30	61	620
Clarke	D	22	63	17	55	8	....	4	36
	F	522	1,795	240	9,469	780	294	342	762
Columbia	D	6	6	2	38	32	....	8	21
	F	78	....	221	1,750	....	....	28	845
Cowlitz	D	23	6	15	312	111	2,960	....	52
	F	46	376	58	1,118	377	92	216	310
Douglas	D	139	49	24	266	40	....	817	231
	F	16	78	110	524	10	2	269	78
Ferry	D	19	22	33	224	68	....	10	85
	F	94	1,135	351	23,924	2	....	156	1,173
Franklin	D	38	12	25	87	....	....	78	32
	F	4	24	4	320	4	54	1,610	36
Garfield	D	4	....	10	100	6	....	6	4
	F	12	61	25	3,200	50	....	36	215
Grant	D	4,950	2,168	2,373	6,607	1,192	708	5,240	1,614
	F	109	89	29	1,326	347	352	182	96
Island	D	9	95	71	4,309	95	....	2	37
	F	7	86	54	....	....	....	4	58
Jefferson	D	2	....	926	....	6	....	....	....
	F	17	36	6	695	34	110	88	42
King	D	24	155	138	1,823	678	67	804	8,689
	F	61	338	149	46,075	82	3,463	2,237	10,489
Kitsap	D	6	12	44	312	46	24	2	690
	F	13	66	16	760	81	27	55	206
Kittitas	D	22	66	42	72	335	112	21	96
	F	27	205	214	4,744	6	54	1,069	773
Klickitat	D	62	12	6	....	94	....	....	....
	F	513	180	978	4,270	630	27	130	1,857
Lewis	D	32	8	158	1,416	272	6	18	419
	F	16	167	729	18,555	254	250	212	1,520
Lincoln	D	284	310	138	168	101	208	258	989
	F	81	137	17	876	39	414	304	102
Mason	D	2	2	7	....	18	....	....	11
	F	3	....	28	6,148	13	10	102	6
Okanogan	D	2,392	305	497	1,854	283	35	285	539
	F	170	335	297	12,296	73	....	304	788
Pacific	D	202	24	299	....	....	....	1	16
	F	18	373	571	4,034	187	920	117	671
Pend Oreille ..	D	46	241	57	100	34	2	18	31
	F	6	60	10	2,480	113	198	130	57
Pierce	D	50	250	148	200	291	2	85	1,873
	F	614	301	1,575	7,923	165	2,875	684	8,099
San Juan	D	....	36	18	....	40	24	12	118
	F	2	48	5	410	16	143	58	45
Skagit	D	24	2,236	432	6,862	121	84	193	2,715
	F	21	111	17	2,620	113	208	134	14,826
Skamania	D	214	....	12	....	100	....	....	....
	F	41	101	83	500	571	150	6	278
Snohomish	D	13	166	257	6,161	129	....	8	507
	F	59	117	177	16,069	206	386	226	1,480
Spokane	D	182	422	236	550	11,151	8,211	648	722
	F	268	630	908	29,327	301	680	1,379	5,412
Stevens	D	700	368	373	2,859	216	....	117	187
	F	205	275	147	14,011	14	247	168	257
Thurston	D	4	....	....	....	224	....	....	9
	F	55	151	786	2,427	220	370	274	725
Wahkiakum ..	D	....	....	....	....	....	....	....	....
	F	....	18	5	400	31	....	100	15
Walla Walla...	D	101	4	142	....	350	200	27	454
	F	363	131	94	2,670	17	33	497	1,758
Whatcom	D	27	7,102	2,694	13,397	118	....	118	360
	F	41	217	225	10,175	67	468	398	1,534
Whitman	D	969	1,384	128	2,057	82	156	217	344
	F	223	323	97	5,255	102	81	170	251
Yakima	D	225	....	924	25,000	....	....	2,103	812
	F	285	488	121	27,615	610	1,073	1,494	4,670
Totals..........		16,348	26,341	19,764	387,790	22,138	21,724	26,450	86,967

NURSERY STOCK PLANTED AS SHOWN BY NURSERY REPORTS—FALL, 1913.

D—Domestic or Washington grown. F—Foreign or grown outside the state.

COUNTY		Apples	Pears	Peaches	Plums Prunes	Cots	Cherries	Quinces	Nuts
Adams	D	292	70	395	138	187	315	14	7
	F	247	56	390	126	130	287	14	7
Asotin	D	2,000	1,000	1,000	....	500	1,000	....	....
	F	31	7	3	13	....	7	....	4
Benton	D	14,922	1,820	160	5,758	121	221	12	3
	F	133	1,025	112	5,542	11	222	12	2
Chehalis	D	427	1,180	58	482	9	38	6	10
	F	552	126	53	168	1	332	3	24
Chelan	D	152,910	20,855	....	10	....	60	....	....
	F	2,965	3,210	5	19	5	7	1	23
Clallam	D	6	2	....	2	....	6	....	....
	F	30	10	....	9	....	18	1	2
Clarke	D	358	127	44	491	11	144	21	43
	F	1,910	2,007	640	3,346	73	758	29	272
Columbia	D	....	....	....	....	....	....	....	....
	F	203	38	336	40	24	50	2	9
Cowlitz	D	328	269	206	155	70	282	6	84
	F	525	51	37	93	20	108	6	22
Douglas	D	719	75	36	47	46	216	....	....
	F	2	....	....	2	....	....	....	....
Ferry	D	4	2	4	6	....	....	....	....
	F	4	....	3	4	....	6	2	....
Franklin	D	17	8	9	2	7	24	....	2
	F	57	2	2	2	54	8	....	....
Garfield	D	....	5,000	....	6	1	....	....	....
	F	12	....	....	8	1	....	....	8
Grant	D	14,413	807	263	1,401	106	207	....	....
	F	10	....	....	7	....	4	....	3
Island	D	50	29	34	35	2	96	1	3
	F	339	96	19	126	4	138	2	12
Jefferson	D	....	....	....	....	....	....	....	....
	F	14	8	....	3	....	....	....	7
King	D	8,137	4,326	685	3,810	799	4,966	90	36
	F	2,668	970	820	1,187	108	2,895	27	79
Kitsap	D	581	174	44	148	23	245	28	3
	F	786	85	64	208	4	377	24	43
Kittitas	D	....	248	46	72	10	120	....	....
	F	52	....	10	17	....	100	7	8
Klickitat	D	480	402	63	932	110	64	....	430
	F	3,999	312	54	14	350	32	1	180
Lewis	D	1,814	862	227	963	707	711	2	....
	F	1,446	418	6	432	13	1,572	65	40
Lincoln	D	112	29	11	25	15	46	9	1
	F	62	....	....	....	....	14	6	....
Mason	D	232	45	30	58	....	57	15	1
	F	56	95	2	....	....	....	....	....
Okanogan	D	8,403	1,999	495	859	458	917	....	8
	F	2,028	....	....	6	1	....	....	8
Pacific	D	488	83	9	212	1	153	10	32
	F	7	2	....	2	....	8	....	18
Pend Oreille	D	5	3	....	....	....	4	....	....
	F	22	18	....	12	....	12	....	....
Pierce	D	1,330	1,653	65	5,633	12	2,084	83	7
	F	2,220	769	668	1,628	415	1,841	94	161
San Juan	D	89	15	11	23	12	120	1	2
	F	....	....	....	....	....	....	....	....
Skagit	D	838	484	58	444	8	734	18	12
	F	293	211	9	170	....	252	12	64
Skamania	D	279	2	....	2	2	2	....	....
	F	290	56	148	1	....	3,192	10	....
Snohomish	D	1,311	369	107	439	13	976	33	37
	F	1,059	1,283	36	323	1	992	11	141
Spokane	D	16,794	1,333	391	214	76	2,438	86	20
	F	5,399	1,035	340	40	50	2,196	60	16
Stevens	D	2,912	71	204	35	4	34	2	4
	F	12	....	....	7	....	6	....	4
Thurston	D	498	3,186	26	504	11	420	4	10
	F	638	260	23	316	4	413	4	22
Wahkiakum	D	....	....	....	....	....	....	....	....
	F	....	....	....	....	....	....	....	....
Walla Walla	D	314	194	50	78	17	183	6	65
	F	676	79	326	5,695	38	102	6	10
Whatcom	D	1,200	3,338	154	247	7	813	17	5
	F	902	420	37	214	7	1,079	13	92
Whitman	D	1,008	63	31	67	38	144	6	5
	F	1,049	5,243	384	170	167	524	8	3
Yakima	D	40,989	14,671	66	....	144	158	....	....
	F	1,104	30	34	740	375	3,194	40	97
Totals		306,182	142,330	9,532	48,983	5,278	38,759	930	2,221

NURSERY STOCK PLANTED—FALL, 1918.—Concluded.

D—Domestic or Washington grown. F—Foreign or grown outside the state.

COUNTY		Grapes	Raspberries	Blackberries	Strawberries	Berries	Roots	Trees	Shrubs
Adams	D	116	58	16	350	146	68	359	275
	F	104	50	....	....	146	33	219	27
Asotin	D	....	....	....	....	....	....	....	....
	F	....	....	....	12	....	....	20	....
Benton	D	480	....	6	100	150	....	64	210
	F	2	10	10	1,110	52	1	22	12
Chehalis	D	10	99	179	1,649	162	172	462	3,236
	F	24	318	703	4,884	28	54	198	740
Chelan	D	....	....	....	1,000	24	....	....	....
	F	13	112	62	360	22	172	140	114
Clallam	D	....	6	....	....	....	....	....	....
	F	....	3	12	....	....	....	2	37
Clarke	D	278	....	....	24	100	....	25	1,449
	F	1,046	719	290	4,203	1,072	329	202	910
Columbia	D	26	....	....	....	290	....	57	....
	F	15	266	....	....	....	....	22	10
Cowlitz	D	611	224	107	....	2,783	....	5	10
	F	20	206	34	1,634	52	54	69	69
Douglas	D	....	....	....	....	....	....	8	4
	F	....	2	1	42	....	....	27	4
Ferry	D	....	....	....	....	8	....	....	66
	F	....	....	....	....	....	....	....	66
Franklin	D	7	....	4	....	....	....	6	208
	F	....	8	1	....	....	....	1	31
Garfield	D	....	....	....	12	....	....	1	2
	F	....	....	....	....	....	54	....	....
Grant	D	81	18	3	50	2,428	....	244	210
	F	2	15	3	205	6	81	31	15
Island	D	10	12	2	1,100	110	6	11	1,289
	F	18	62	7	1,109	58	100	42	150
Jefferson	D	....	....	....	....	....	....	....	....
	F	8	20	....	100	4	29	22	16
King	D	471	448	102	4,300	805	....	445	2,937
	F	100	377	1,437	410	36	3,569	3,720	5,149
Kitsap	D	27	10	56	....	425	12	17	88
	F	52	57	226	352	26	....	57	139
Kittitas	D	8	48	28	....	742	....	153	148
	F	4	46	56	100	8	56	45	26
Klickitat	D	32	38	18	....	76	89	58	703
	F	44	22	12	500	4	29	37	836
Lewis	D	36	36	251	500	127	....	14	112
	F	190	1,012	519	3,651	661	115	309	1,566
Lincoln	D	62	72	20	880	....	....	19	125
	F	....	....	....	....	....	....	....	237
Mason	D	10	....	....	1,148	78	12	6	16
	F	....	12	12	5,000	50	6	96	18
Okanogan	D	4	40	....	....	8	54	44	20
	F	4	40	....	....	8	54	44	20
Pacific	D	60	898	64	1,671	760	214	65	565
	F	....	54	24	66	99	74	16	120
Pend Oreille ...	D	3	24	7	100	....	....	3	33
	F	174	24	....	....	....	....	....	898
Pierce	D	95	147	298	2,082	219	12	2,840	13,060
	F	....	2,309	2,824	2,650	1,557	151	676	3,070
San Juan	D	4	79	43	1,059	151	100	20	163
	F	....	....	....	....	....	....	....	....
Skagit	D	18	4,579	1,159	3,951	451	68	330	3,965
	F	56	163	18	5,362	355	108	467	1,191
Skamania	D	....	....	....	....	....	....	....	....
	F	....	....	....	....	....	....	16	20
Snohomish	D	39	239	55	2,450	828	442	364	2,112
	F	30	786	168	10,700	158	116	573	1,171
Spokane	D	620	598	84	229	383	331	1,274	3,401
	F	63	114	4	229	20	162	1,088	3,283
Stevens	D	6	170	....	....	4	29	32	18
	F	2	170	....	....	4	29	32	18
Thurston	D	4	112	462	8,477	115	....	7	323
	F	15	259	89	10,600	272	149	85	339
Wahkiakum ...	D	....	....	....	....	....	....	....	....
	F	....	....	....	....	....	....	....	....
Walla Walla...	D	101	5,325	150	730	128	....	147	356
	F	7,344	343	161	5,700	289	....	105	1,517
Whatcom	D	645	3,774	861	51,412	1,529	....	89	459
	F	19	1,379	362	1,400	234	48	218	1,446
Whitman	D	32	75	280	700	85	....	120	168
	F	256	561	384	1,807	100	28	347	759
Yakima	D	....	1,746	2,683	2,000	3,812	....	398	225
	F	175	198	865	350	4,100	165	185	793
Totals..........		18,685	28,587	15,272	148,510	26,292	7,374	16,820	60,782

NURSERY STOCK PLANTED AS SHOWN BY NURSERY REPORTS—SPRING, 1914.

D—Domestic or Washington grown. F—Foreign or grown outside the state.

COUNTY		Apples	Pears	Peaches	Plums Prunes	Cots	Cherries	Quinces	Nuts
Adams	D	510	35	20	30	12	57	3	7
	F	139	19	104	60	18	106	5	23
Asotin	D	500	100	200	50	30	80	10	....
	F	81	167	17	51	25	83	5	28
Benton	D	12,083	2,752	648	1,998	227	567	46	89
	F	177	83	430	33	30	194	30	64
Chehalis	D	12	1	....	....	....	3	....	2
	F	525	134	32	73	5	106	13	62
Chelan	D	116,776	19,738	558	2,558	7,861	2,066	99	72
	F	12,090	4,192	317	212	1,110	336	36	19
Clallam	D	143	109	....	66	2	73	5	4
	F	36	22	....	....	2	18	....	....
Clarke	D	341	68	1,094	22,238	....	58	4	59
	F	710	215	92	602	6	130	5	483
Columbia	D	....	....	....	....	....	....	....	....
	F	76	16	65	5	8	14	4	22
Cowlitz	D	173	34	20	52	13	68	5	36
	F	352	121	28	44	2	62	5	44
Douglas	D	17,495	1,965	226	678	2,202	260	25	15
	F	963	163	24	48	26	248	4	8
Ferry	D	77	35	....	18	....	44	....	....
	F	5,121	434	120	843	31	1,338	185	14
Franklin	D	485	16	6	10	2	13	....	53
	F	808	12	47	4	12	83	27	9
Garfield	D	1,002	268	197	77	96	235	4	6
	F	144	21	35	29	8	38	1	4
Grant	D	62,532	1,484	560	538	929	1,281	53	117
	F	1,428	78	137	131	50	137	6	172
Island	D	645	145	23	76	3	230	7	4
	F	70	23	10	27	11	122	3	6
Jefferson	D	246	19	8	48	....	76	....	1
	F	34	16	....	....	....	5	....	....
King	D	9,897	2,674	371	1,444	64	3,681	151	186
	F	376	75	41	190	31	394	3	30
Kitsap	D	362	163	75	142	12	163	27	26
	F	46	7	5	11	4	14	1	....
Kittitas	D	559	203	28	97	57	29	6	1
	F	933	181	122	152	34	280	6	15
Klickitat	D	18,288	1,719	278	2,093	72	329	65	25
	F	7,920	1,295	149	202	517	281	16	377
Lewis	D	843	717	67	357	45	179	25	163
	F	1,034	332	139	193	56	436	13	58
Lincoln	D	1,625	530	93	149	50	214	6	14
	F	478	192	82	93	117	103	1	27
Mason	D	414	52	3	63	....	88	4	1
	F	79	7	2	309	8	15	....	....
Okanogan	D	85,313	8,072	768	1,339	3,242	1,396	98	138
	F	10,554	1,072	1,301	1,411	345	3,104	191	107
Pacific	D	102	47	4	8	....	23	2	1
	F	79	30	23	30	....	52	....	8
Pend Oreille	D	310	25	13	38	4	62	....	....
	F	197	8	20	42	20	27	1	10
Pierce	D	1,620	660	162	303	28	1,413	45	80
	F	671	409	44	154	....	360	49	33
San Juan	D	35	1,383	5	12	2	17	....	4
	F	16	112	3	3	....	32	1	1
Skagit	D	1,286	490	83	242	22	585	45	52
	F	368	195	23	306	11	334	11	18
Skamania	D	509	3	....	....	....	....	....	50
	F	380	216	47	14	....	11	....	12
Snohomish	D	5,001	885	129	792	29	671	54	44
	F	864	304	20	302	4	285	12	32
Spokane	D	49,510	2,233	980	1,487	310	2,027	54	192
	F	9,623	1,632	692	691	380	1,440	66	109
Stevens	D	38,209	1,008	127	202	46	254	10	20
	F	914	150	240	179	56	299	15	48
Thurston	D	178	1,058	15	66	2	418	1	11
	F	584	2,012	28	85	13	933	7	46
Wahkiakum	D	30	4	12	4	2	12	2	2
	F	13	11	....	5	....	2	....	....
Walla Walla	D	3,000	104	104	11	2	69	1	....
	F	5,460	1,188	958	871	580	674	16	107
Whatcom	D	1,189	7,018	150	347	55	1,094	432	52
	F	489	5,078	17	126	3	293	3	23
Whitman	D	979	862	142	835	63	658	21	22
	F	448	61	197	405	28	127	6	477
Yakima	D	55,576	17,260	334	4,452	126	1,179	....	175
	F	3,807	6,442	306	540	1	3,316	12	208
Totals		555,962	100,659	13,417	51,381	19,162	35,389	2,069	4,428

NURSERY STOCK PLANTED—SPRING, 1914.—Concluded.

D—Domestic or Washington grown. F—Foreign or grown outside the state.

COUNTY		Grapes	Raspberries	Blackberries	Strawberries	Berries	Roots	Trees	Shrubs
Adams	D	15	27	7	....	100	182	181	576
	F	42	20	18	1,100	57	9	82	88
Asotin	D	....	....	....	....	....	....	....	....
	F	74	64	64	3,500	....	....	38	84
Benton	D	7,387	434	2	10,500	90	5,490	71	1,362
	F	3,211	6	48	68,075	427	2	3,224	113
Chehalis	D	....	....	12	....	48	18	226	212
	F	28	356	74	2,110	254	169	156	561
Chelan	D	788	498	748	602	24	1,586	889	1,621
	F	4,134	320	88	16,850	79	1,443	798	482
Clallam	D	2	25	41	722	94	16	17	84
	F	1	....	....	2,350	2	....	9	18
Clarke	D	124	68	149	....	37	24	....	20
	F	813	140	61	10,006	141	207	139	846
Columbia	D	....	....	....	....	....	....	....	....
	F	7	50	46	1,550	9	44	24	466
Cowlitz	D	24	24	18	600	127	242	24	120
	F	34	25	49	1,914	95	184	228	428
Douglas	D	143	49	45	1,645	66	36	948	378
	F	28	10	....	9,225	8	88	127	94
Ferry	D	1	12	24	50	24	18	26	87
	F	150	808	516	17,384	....	44	285	1,437
Franklin	D	42	....	50	....	....	....	....	12
	F	51	24	3	200	9	....	168	3
Garfield	D	70	82	108	750	....	....	84	124
	F	61	14	21	210	4	27	9	65
Grant	D	5,318	331	89	288	41	....	2,153	1,043
	F	314	184	59	8,925	69	385	532	312
Island	D	52	350	123	700	9	....	16	105
	F	12	24	....	725	....	....	....	26
Jefferson	D	15	100	54	500	....	....	....	14
	F	....	100	100	1,325	4	....	3	123
King	D	441	3,809	1,678	33,306	3,918	2,224	1,606	9,689
	F	37	216	268	9,214	166	351	130	1,916
Kitsap	D	56	362	332	1,150	375	108	85	1,347
	F	6	15	154	3,950	17	57	2	50
Kittitas	D	3	30	42	500	20	....	18	71
	F	34	330	272	5,663	81	5,318	2,668	618
Klickitat	D	895	112	172	5,006	143	29	74	88
	F	231	91	634	65,163	116	105	135	220
Lewis	D	16	164	21	500	687	10	27	1,446
	F	56	297	1,374	9,948	867	442	92	965
Lincoln	D	172	170	22	100	149	72	795	746
	F	132	104	22	13,539	21	201	52	138
Mason	D	9	....	....	100	124	17	8	1
	F	....	....	....	500	6	6	146	46
Okanogan	D	1,362	268	178	2,108	3	108	717	550
	F	340	397	564	15,046	705	22	894	1,125
Pacific	D	....	102	6	50	6	6	2	3
	F	38	77	70	3,450	36	58	22	277
Pend Oreille ..	D	32	1	27	....	289	19	36	49
	F	4	47	10	1,762	40	213	4	20
Pierce	D	146	2,835	312	6,523	3,624	13,650	1,029	13,606
	F	165	134	1,367	16,727	30	244	262	1,054
San Juan	D	16	40	36	102	50	12	13	37
	F	....	48	48	3,525	18	6	12	24
Skagit	D	16	706	114	4,500	152	161	60	1,890
	F	23	4,954	1,664	9,650	21	57	359	5,125
Skamania	D	....	....	....	....	12	....	....	....
	F	56	17	10	1,775	6	4	1,000	58
Snohomish	D	57	719	398	3,062	784	139	80	584
	F	37	151	112	8,854	332	245	292	1,450
Spokane	D	1,108	1,120	272	9,650	1,888	1,983	1,949	5,392
	F	287	506	705	60,626	289	598	2,085	4,018
Stevens	D	132	116	58	2,409	10	387	335	700
	F	126	414	147	12,846	73	212	120	217
Thurston	D	12	12	6	....	10	....	6	168
	F	44	265	474	4,343	37	175	71	208
Wahkiakum ...	D	12	12	6	....	10	....	....	1
	F	....	10	....	100	6	....	....	....
Walla Walla...	D	500	250	200	....	6,000	....	402	7,154
	F	484	508	225	20,410	68	56	550	640
Whatcom	D	74	64,829	2,509	56,000	5,908	64	103	614
	F	86	177	3,436	17,076	30	197	228	1,908
Whitman	D	185	256	132	2,550	251	61	1,178	459
	F	591	717	582	6,576	114	379	1,533	147
Yakima	D	508	....	10	800	....	....	200	2,008
	F	1,145	576	31	21,436	224	494	200	1,422
Totals..........		32,145	89,609	21,807	602,399	29,484	38,649	30,537	79,143

Volunteer crew of the Lower Natches Valley Fruit Protective Association. These men are pulling together in the pear blight work and have the community's interest at heart.

Eighteen automobiles filled with business men of North Yakima, Sunnyside and Prosser on a blight inspection tour of the Yakima valley to get in touch with the pear blight situation.

GENERAL REPORT OF INSPECTIONS MADE OF NURSERY STOCK FROM FOREIGN COUNTRIES BY HORTICULTURAL DIVISION, STATE DEPARTMENT OF AGRICULTURE.

In addition to the large amount of nursery stock grown within this state and the large quantity shipped into Washington from outside states the Horticultural Inspectors of our State Department of Agriculture have inspected during the period October 1, 1913, to June 15, 1914, 426 cases of nursery stock containing a total of 808,102 plants grown in foreign countries and destined to Washington points. The attached tabulation of shipments shows the number of cases shipped to the different distributing points and the foreign countries from which they were shipped.

The inspection of these foreign shipments is done under the general supervision and in co-operation with the Federal Horticultural Board, Washington, D. C. To the Horticultural Division of the Department of Agriculture of this state is left the entire responsibility for the inspection at destination of importations of foreign nursery stock into the State of Washington. The Federal Horticultural Board issues permits for the importation of foreign nursery stock and upon its arrival at the port of entry (usually New York, Seattle, Portland or Tacoma) complete information is furnished the Chief of the State Horticultural Division, Olympia, giving the origin, name of importer at port of entry and consignee, quantity and kind of nursery stock, number of cases and marks and numbers on cases.

The Federal Horticultural Board furnishes this information to this office on regular report forms which are also spaced for state inspectors' return report to the Federal Horticultural Board after a very careful inspection has been made by our Inspector. The purpose of rigid inspection of nursery stock from foreign countries is to intercept the various pests likely to be introduced.

The federal act providing for co-operative work between Federal and State Horticultural Inspectors has greatly stimulated the foreign shippers to make a closer inspection of their stock before shipping. The results of this are shown in the general quality of the imported nursery stock and its more general freedom from infestation. However, several serious infestations were intercepted which otherwise might have become a serious menace to our horticultural industry.

On inspection of the above mentioned 426 cases of nursery stock infestation of different kinds were found by our Inspectors as follows:

Dec. 19, 1913.	Shipment of 4 cases of ornamental trees from Japan contained two infestations of Wistaria gall fly.—(Agromyza websteri.)
Jan. 8, 1914.	Shipment of 31 cases of woody plants from Japan contained 85 plants infested with Wistaria gall fly.

Mar. 9 and 10, 1914.	Shipment of 25 cases of nursery stock, evergreens and decidious trees and shrubs from Japan contained infestations of Parlatori theae (scale) on maple, and all of Wistaria plants badly infested with gall fly and Mantid egg-masses.
Mar. 17 and 18, 1914.	Shipment of two cases nursery stock from Japan infested with Crown gall (Bacterium tumefaciens), Bag worm (Tryridopteryx sp.), fungous canker on chestnut, hairy root and borer larvae. 1140 chestnut trees burned on account of canker.
Mar. 26, 1914.	Shipment 5 cases of nursery stock from Japan infested with Crown gall, borer larvae, fungus canker. 100 chestnut trees burned on account of canker.
Mar. 20, 1914.	Shipment of 4 cases nursery stock from Japan; 50 Wistaria gall fly infestations. Borer larvae in Thuya Obtusa. Mantid egg-masses.
April 13, 1914.	Shipment one case woody plants from France; 23 variegated holly; two laurels infested with soft brown scale (Coccus hesperidum).

Among the very serious pests likely to be introduced are Gypsy Moth, Brown Tail Moth, Mediterranean Fruit Fly, Chestnut Blight, and other important insect and fungous diseases. It is encouraging to find the greater part of these foreign shipments practically free of infection, but the inspection has in every case been carefully and thoroughly done with the fact before us that to overlook one infestation of a serious pest might prove disastrous in time to some of the crops of our state.

FROM	TO	Ornamental deciduous trees and shrubs	Coniferous trees	Evergreens	Field grown florist stock	Fruit trees and fruit tree stocks	All other plants	Number of cases	
France	Seattle	44,829		11,100		42,000	59,080	53	
England	Seattle	6						1	
Ireland	Seattle	27						4	
Japan	Seattle	3,868	983	3,063	626	160		82	
British Columbia	Seattle	50						1	
Belgium	Seattle	325		475				11	
Holland	Seattle	6,831		1,690	25		14,810	113	265
England	Tacoma			200				2	
Ireland	Tacoma	511						2	
Japan	Tacoma	50		25	85			3	
Holland	Tacoma	850						1	8
France	Spokane						1,500	1	
Japan	Spokane			725				4	
Belgium	Spokane	30		653				9	
Holland	Spokane	1,735		6			1,500	3	17
France	Yakima	167,695		101,265		92,800		98	
France	Yakima					203,000		29	122
France	Wenatchee					40,000		2	2
Belgium	Miscellaneous points in Washington	294					5,230	3	
Holland								7	
Germany								1	
France								1	12
Totals		227,101	983	119,202	736	377,960	82,120		426

Total imported plants, 808,102

LIST OF LICENSED NURSERYMEN AND AGENTS.

During the period covered by this report the Department of Agriculture has issued 170 licenses to nurserymen and 191 to nursery agents. A fee of $5.00 is charged for the former and $1.00 for the latter, making a total of $1,041.00 received from nursery licenses.

Owing to the fact that the above number includes renewals, there were in force on June 30, 1914, 147 nurserymens' licenses and 109 agents' licenses, the list for which follows:

Nurseries, Agents and Location.	*Expiration Date.*
Aabling-Ebright Seed Co., Seattle, Wash.	Feb. 21, 1915
Albany Nursery Co., Albany, Oregon	Mar. 31, 1915
Ambrose, Mrs. Gabrielle, Espanola, Wash.	April 21, 1915
Andora Nurseries, Philadelphia, Pa.	June 24, 1915
Aries, P. E., Rose Nursery, Seattle, Wash.	Feb. 16, 1915
Ballygreen Nurseries, Hanford, Wash.	May 31, 1915
Beall Greenhouse Co., Vashon, Wash.	Mar. 11, 1915
Beery, L. O. & Son, Seattle, Wash.	Sept. 9, 1914
Bell, C. E., Grandview, Wash.	Nov. 25, 1914
Berneche, E. J., Olympia, Wash.	Feb. 16, 1915
Biltmore Nursery, Biltmore, N. C.	Mar. 1, 1915
Birchler, H., Portland, Ore.	Nov. 24, 1914

Nurseries, Agents and Location.	*Expiration Date.*
Bobbink & Atkins, Rutherford, N. J.	Mar. 12, 1915
Bon Marche, Seattle, Wash.	Mar. 12, 1915
Brewster, Home Nursery, Brewster, Wash.	Sept. 28, 1914
Brown Brothers Nursery, North Yakima, Wash.	Oct. 24, 1914
Agt: D. T. McKaig, North Yakima, Wash.	Oct. 24, 1914
Brown, E. E., Detroit, Wash.	Oct. 15, 1915
Burdette, H. B., Seattle, Wash.	Nov. 11, 1914
Agt: Peter Hansen, Seattle, Wash.	April 14, 1915
Burglehaus, F. H., Sumner, Wash.	Mar. 4, 1915
Busse, Carl, North Yakima, Wash.	Oct. 11, 1914
Agt: F. A. Morgan, North Yakima, Wash.	Feb. 5, 1915
Butzer, J. J., Portland, Ore.	Nov. 4, 1914
Bybee, Gay M., Camas, Wash.	Feb. 2, 1915
Capital City Nursery Co., Salem, Oregon	Mar. 31, 1915
Agts: Alford, S. S., Lewiston, Idaho	June 10, 1915
Dahl, C. H., Everett, Wash.	May 20, 1915
Horne, Z. D., Renton, Wash.	May 20, 1915
Warring, T. B., Oak Harbor, Wash.	May 20, 1915
Capp's Co-operative Nursery Co., Inc., Prosser, Wash.	Nov. 6, 1914
Carlton Nursery Co., Carlton, Oregon	Jan. 14, 1915
Carver, Gerald (Seattle Nur. Co.), Seattle, Wash.	July 6, 1915
Carver, Gleason A., Seattle, Wash.	Dec. 20, 1914
Christopher Nurseries, Christopher, Wash.	April 8, 1915
Agts: Batterton, W. W., Snohomish, Wash.	April 8, 1915
Dobson, O. P., Bremerton, Wash.	April 8, 1915
Gilbert, E. H., Chehalis, Wash.	May 20, 1915
Goodwin, E. H., Tacoma, Wash.	April 8, 1915
McCandlish, Geo., Christopher, Wash.	April 8, 1915
McCaulley, C. M., Arlington, Wash.	April 8, 1915
Clarke Brothers, Portland, Oregon	Nov. 17, 1914
Clarke County Nursery, Camas, Wash.	Nov. 16, 1914
Columbia Florist & Nursery Co., Pasco, Wash.	Mar. 11, 1915
Columbia & Okanogan Nursery Co., Wenatchee, Wash.	Mar. 31, 1915
Agts: Foster, A. J., South Bend, Wash.	Mar. 11, 1915
Gussman, P. R., Okanogan, Wash.	Jan. 21, 1915
McLean, F. M., Winthrop, Wash.	Nov. 5, 1914
Columbia River Nursery Co., Brewster, Wash.	Mar. 31, 1916
Cowlitz Valley Nursery, Kelso, Wash.	Dec. 18, 1914
Sedro-Woolley Nursery, Sedro-Woolley, Wash.	Mar. 16, 1915
Eastern Nurseries (Henry S. Dawson), Jamaica Plain, Mass.	May 10, 1915
Dreer, Henry A., Philadelphia, Pa.	Jan. 27, 1915
Agt: Karins, James J., Riverton, N. J.	Jan. 27, 1915
Engvolsen Nursery Co., Irondale, Wash.	Jan. 28, 1915
Agts: Ketchum, E. J., Blaine, Wash.	Feb. 27, 1915
Smith, George D., Snohomish, Wash.	Feb. 27, 1915
Everett Floral Co., Everett, Wash.	Oct. 29, 1914
Fancher Creek Nurseries, Fresno, Cal.	Aug. 1, 1914
Furuya, M. Co., Seattle, Wash.	Nov. 7, 1914
Agts: Ariizumi, D., Seattle, Wash.	Nov. 7, 1914
Motosaka, T., Crystal Springs, Wash.	Nov. 7, 1914
Morinaka, S., Tacoma, Wash.	Nov. 7, 1914
Nishikawa, K., Seattle, Wash.	Nov. 7, 1914
Gardner Nursery Co., Osage, Iowa	April 1, 1915
Gerhardt, O., Riverton, Wash.	Mar. 22, 1915
German Nurseries and Seed House, Beatrice, Nebr.	April 1, 1915
Gillette, W. W., Orondo, Wash.	April 1, 1915
Home Nursery Co., Richland, Wash.	May 9, 1915

Nurseries, Agents and Location.	*Expiration Date.*
Hamilton Nursery Co., North Yakima, Wash.	Feb. 19, 1915
Agts: Eyler, G. E., Selah, Wash.	Mar. 11, 1915
Frantz, I. H., North Yakima, Wash.	Mar. 11, 1915
Harmeling, Stephen J., Vashon, Wash.	April 6, 1915
Heidenhain, H., Wenatchee, Wash.	Nov. 10, 1914
Henessey, J. C., Seattle, Wash.	Jan. 5, 1915
Hendrickson, T. D., Amboy, Wash.	Dec. 9, 1914
Highland Nursery, Palouse, Wash.	Oct. 14, 1914
Hinz, A. A., Tacoma, Wash.	April 7, 1915
Hoffman, Julius W., Sharon, Wash.	Nov. 5, 1914
Hollywood Gardens, Seattle, Wash.	Jan. 31, 1915
Home Nursery Co. (F. P. Freeman), Richland, Wash.	May 9, 1915
Hood River Standard Nur. Co., Hood River, Ore.	Dec. 1, 1914
Hubenthal, Otto, Spokane, Wash.	July 16, 1915
Hull, Curtis, Kiesling, Wash.	Oct. 5, 1914
Hunter Land Co., Hunters, Wash.	June 30, 1915
Indermuhle, G., Portland, Ore.	Nov. 1, 1914
Kellogg, R. M., Three Rivers, Mich.	Feb. 25, 1915
Kelley, Tim, Wapato, Wash.	Oct. 19, 1914
Kimm, L. S., (Rosalia Nur's.), Rosalia, Wash.	Nov. 10, 1914
Klamm, Conrad, Olympia, Wash.	Nov. 24, 1914
Koerner, L. G., Meyers Falls	April 14, 1915
Lafayette Nursery Co., Lafayette, Ore.	Nov. 7, 1914
Lakeview Nursery, Lakeview, Wash.	Oct. 15, 1915
Lange, Paul E., Seattle, Wash.	Dec. 4, 1914
Malmo, Charles, Seattle, Wash.	Oct. 16, 1914
Meehan, Thomas & Sons, Dresher, Pa.	July 11, 1915
Methow Trading Co., Winthrop, Wash.	Mar. 12, 1915
Milton Nursery Company, Milton, Ore.	Mar. 31, 1915
Agts: Bothwell, P. A., College Place, Wash.	Nov. 5, 1914
Bryce, James, Hoquiam, Wash.	Oct. 14, 1914
Harrison, W., Dayton, Wash.	Nov. 9, 1914
Hobbs, W. W., Spokane, Wash.	Sept. 1, 1915
Nagel, A. G., Milton, Ore.	April 14, 1915
Sylvester, J. H., Pasco, Wash.	Nov. 5, 1914
Mitchell Nursery Co., Tacoma, Wash.	Nov. 16, 1914
Moore, J. Newton, Sumas, Wash.	Jan. 3, 1915
Monte Vista Nurseries, Scappoose, Ore.	Dec. 8, 1914
Morisse Seed, Nurs. & Fert. Co., Tacoma, Wash.	Dec. 2, 1914
Mount Vernon Nurseries, Mount Vernon, Wash.	Feb. 15, 1915
Agt: Rowe, J. J., Ferndale, Wash.	Feb. 15, 1915
Murray Brothers Nursery, Malott, Wash.	Oct. 21, 1914
McCormack Brothers Dep't Store, Tacoma, Wash.	Feb. 24, 1915
McCoy, L. W., Seattle, Wash.	Feb. 12, 1915
National Nursery, Seattle, Wash.	Dec. 6, 1914
Nickerson, P. E., Prosser, Wash.	Mar. 11, 1915
Nishitani, D., Seattle, Wash.	Feb. 12, 1915
Northern Nurseries, Chewelah, Wash.	Aug. 12, 1914
Northwest Floral Co., Tacoma, Wash.	Jan. 2, 1915
Okamaru, Y. Co., Tacoma, Wash.	Jan. 20, 1915
Oregon Nursery Company, Orenco, Oregon	Mar. 31, 1915
Agts: Barrett, J. W., Cosmopolis, Wash.	Aug. 6, 1914
Bard, A. W., Elma, Wash.	Sept. 8, 1914
Fuller, Fred E., Vancouver, Wash.	Feb. 24, 1915
Gant, G. W., Vancouver, Wash.	Dec. 30, 1914
Jensen, E. M., Gig Harbor, Wash.	Dec. 30, 1915
Johns, B. F., Stevenson, Wash.	Jan. 30, 1915

Nurseries, Agents and Location.	*Expiration Date.*
Oregon Nursery Company, Orenco, Oregon—*Continued.*	
Agts: Jones, Guy, Spokane, Wash.	May 20, 1915
Ketcham, W. O., Brush Prairie, Wash.	May 20, 1915
Landon, S. J., Washougal, Wash.	Sept. 18, 1914
Lester, D. H., Goldendale, Wash.	Jan. 30, 1915
McCready, C. D., Vancouver, Wash.	July 1, 1915
Miller, J. A., Kalama, Wash.	Sept. 8, 1914
Patton, J. B., Spokane, Wash.	May 20, 1915
Pettinger, A. E., Bellingham, Wash.	Jan. 19, 1915
Phelps, L. N., Vancouver, Wash.	Feb. 24, 1915
Pickett, William, Vancouver, Wash.	Mar. 11, 1915
Robly, A. B., Tacoma, Wash.	April 27, 1915
Romine, John, Vancouver, Wash.	July 1, 1915
Wilson, W. A., Kelso, Wash.	April 27, 1915
Oroville Orchard & Nursery Co., Oroville, Wash.	Jan. 15, 1915
Overman's Nursery, Spokane, Wash.	Aug. 23, 1915
Pacific Nursery Company, Portland, Oregon	May 1, 1915
Agts: Coyle, Pat, Vancouver, Wash.	Aug. 12, 1914
Daly, Thomas, Everett, Wash.	Jan. 15, 1915
McIvoy, Irvin, Douglas, Wash.	Jan. 15, 1915
Parker, R. H., Aberdeen, Wash.	July 1, 1915
Thompson, E. C., Lakeview, Wash.	Aug. 12, 1914
Stimson, Mrs. Martha, Kapowsin, Wash.	June 2, 1915
Wiest, John E., Tacoma, Wash.	July 1, 1915
Payne, Frank E., Camas, Wash.	Dec. 15, 1914
Perry, M. O., Selah, Wash.	Dec. 6, 1914
Phillips Floral Co., Walla Walla, Wash.	Mar. 17, 1915
Pilkington, J. B., Portland, Oregon	July 25, 1915
Portland Seed Co., Portland, Ore.	Mar. 31, 1915
Agt: Davis, F. E., Centralia, Wash.	Mar. 31, 1915
Portland Wholesale Nursery Co., Portland, Oregon	Sept. 28, 1914
Puget Sound Nur. & Seed Co., Seattle, Wash.	July 1, 1915
Puget Sound Seed Gardens, La Conner, Wash.	Mar. 31, 1915
Puyallup Nursery, Puyallup, Wash.	July 20, 1915
Quaker Nurseries, Salem, Oregon	Mar. 31, 1915
Agts: Clark, W. H., Olympia, Wash.	Dec. 30, 1914
Eicholtz, E. F., Hamilton, Wash.	July 1, 1915
McCormick, W. J., Olympia, Wash.	Feb. 27, 1915
Ray, J. R., Pe Ell, Wash.	Dec. 30, 1914
Richardson, L. H., Entiat, Wash.	Nov. 7, 1914
Richland Nursery Co., Richland, Wash.	Aug. 1, 1914
Agt: Lakin, Charles, Greenacres, Wash.	April 25, 1915
Richmond Nurseries, Richmond, Wash.	April 17, 1915
Reigel (E) & Cooper (W. I.), Vancouver, Wash.	Nov. 24, 1914
Rock Island Nurseries, Wenatchee, Wash.	Sept. 18, 1914
Agt: Hoffman, F. W., Wenatchee, Wash.	Feb. 11, 1915
Routledge Seed & Floral Co., Portland, Oregon	Oct. 16, 1914
Rumbolz, Charles C., Malott, Wash.	Sept. 20, 1914
Russellville Nurseries, Portland, Oregon	May 26, 1915
Agts: Lein, R. K., Portland, Oregon	June 16, 1915
Thatcher, W. H., Portland, Oregon	Mar. 16, 1915
Salem Nursery Co., Inc., Salem, Oregon	July 1, 1915
Agts: Avey, D. B., Kent, Wash.	July 20, 1915
Bailey, A. H., Marysville, Wash.	July 20, 1915
Batchelor, Harry, Blaine, Wash.	Feb. 11, 1915
Barnett, J. E., Napavine, Wash.	July 20, 1915
Farr, J. E., Bellingham, Wash.	April 14, 1915
Ferris, E. D., Tacoma, Wash.	July 20, 1915

Nurseries, Agents and Location.	*Expiration Date.*
Salem Nursery Co., Inc., Salem, Oregon—*Continued.*	
Agts: Morse, B. F., Seattle, Wash.	July 20, 1915
Reavill, A. J., Blaine, Wash.	Feb. 11, 1915
Spraker, C. H., Clatskamie, Oregon	Aug. 9, 1914
Waldorf, R. E., Salem, Oregon	Nov. 10, 1914
Sandved Nursery, Seattle, Wash.	Mar. 25, 1915
Schmidt & Botley Co., Springfield, Ohio	June 14, 1915
Schoenig, Charles, Seattle, Wash.	July 1, 1915
Seattle Landscape & Nursery Co., Seattle, Wash.	Feb. 1, 1915
Shamrock Nurseries, Wapato, Wash.	Aug. 27, 1914
Sherbrooke, W. E., Cornelius, Ore.	Dec. 5, 1914
Agts: Becker, O. H., Cornelius, Ore.	Oct. 31, 1914
Natchett, James, Bellingham, Wash.	Oct. 31, 1914
Rhodius, P. N., Sedro-Woolley, Wash.	Feb. 24, 1915
Shoenig, Henry, Vancouver, Wash.	Feb. 15, 1915
Sibson Rose Nurseries, Portland, Oregon	Nov. 25, 1914
Silva-Bergtholdt Co., Inc., Newcastle, Cal.	Mar. 14, 1915
Simpson, Charles S., North Yakima, Wash.	Nov. 24, 1914
Smith Floral Company, Tacoma, Wash.	Nov. 14, 1914
Spokane Chronicle Co., Spokane, Wash.	Mar. 20, 1915
Stark Bros. Nurseries & Orchards Co., Louisiana, Mo.	Mar. 31, 1915
State Floral Co., North Yakima, Wash.	April 18, 1915
Stone Fisher Company, Tacoma, Wash.	Feb. 16, 1915
Storrs Harrison Co., Painesville, Ohio	Dec. 29, 1914
Sylvan Home Nursery, Hillyard, Wash.	Aug. 11, 1914
Taylor, H. S. & Co., Rochester, N. Y.	Feb. 16, 1915
Agts: Culbertson, F. R., Spokane, Wash.	Mar. 23, 1915
Rhodes, W. L., Seattle, Wash.	Feb. 11, 1915
Toppenish Nursery Company, Toppenish, Wash.	May 25, 1915
Agts: Abrahamson, G. V., Everett, Wash.	July 1, 1915
Beavers, John, Cougar, Wash.	July 1, 1915
Fernstrom, A. H., Leavenworth, Wash.	Mar. 4, 1915
Fernstrom, J. A., Leavenworth, Wash.	Feb. 25, 1915
Gray, A. H., Leavenworth, Wash.	Feb. 25, 1915
Gray, Carl, Leavenworth, Wash.	Feb. 11, 1915
Gray, Mrs. Carl, Leavenworth, Wash.	Feb. 11, 1915
Kimball, W., Reardan, Wash.	July 1, 1915
Krom, Edw., Leavenworth, Wash.	Feb. 11, 1915
Pierce, Mrs. Fred, Kalama, Wash.	Mar. 16, 1915
Townsend, J., Spokane, Wash.	April 25, 1915
True to Name Nursery, Hood River, Oregon	Nov. 20, 1914
Van Holderbeke Nursery Co., Inc., Spokane, Wash.	Sept. 14, 1914
Ward, T. J., Spokane, Wash.	Mar. 31, 1915
Washington Nursery Company, Toppenish, Wash.	April 1, 1915
Agts: Barth, W. F., Anacortes, Wash.	April 14, 1915
Bickerton, W. J., Roslyn, Wash.	July 1, 1915
Bischop, Rash., Walla Walla, Wash.	Jan. 21, 1915
Brookover, J. L., Shelton, Wash.	Aug. 27, 1915
Cochran, M. D., Starbuck, Wash.	July 1, 1915
Duncan, W. H., Dungeness, Wash.	July 1, 1915
Koenigs, Anthony, Spokane, Wash.	April 14, 1915
Lescano, C. G., Deer Park, Wash.	July 1, 1915
Nightingale, H. M., Newport, Wash.	July 1, 1915
Nisonger, T. A., Seattle, Wash.	July 1, 1915
Rose, H. E., Aberdeen, Wash.	July 1, 1915
Runnels, T. W., Tonasket, Wash.	Mar. 11, 1915
Shadow, L. R., Chehalis, Wash.	July 1, 1915
Simpson, A. M., Renton, Wash.	July 1, 1915

Nurseries, Agents and Location.	*Expiration Date.*
Washington Nursery Company, Toppenish, Wash.—*Continued.*	
Agts: Smith, M. E., South Bend, Wash.	Aug. 27, 1914
Syme, Isaac, Arden, Wash.	July 1, 1915
Titus, J. M., Toppenish, Wash.	Aug. 27, 1915
Webb, Charles J., Kettle Falls, Wash.	April 23, 1915
Westaby, C. T. & J. L., North Yakima, Wash.	Dec. 16, 1914
Whitney, S. P., Seattle, Wash.	Jan. 16, 1915
Wibra, G. I., Chehalis, Wash.	Oct. 31, 1914
Wild Rose Orchard Co., Spokane, Wash.	Mar. 2, 1915
Wingren, Olaf J., La Conner, Wash.	Jan. 11, 1915
Woodburn Nurseries, Woodburn, Ore.	Oct. 19, 1914
Woolworth, F. W. & Co., Tacoma, Wash.	April 21, 1915
White Salmon Nursery, White Salmon, Wash.	April 6, 1915
Yakima & Columbia River Nur. Co., North Yakima, Wash.	Oct. 12, 1914
Yakima Valley Nursery Co., Toppenish, Wash.	June 15, 1915
Young (Fred M.) & Lester (Clyde), Walla Walla, Wash.	Mar. 17, 1915

WORK OF HORTICULTURAL INSPECTORS IN THE ORCHARDS.

The orchards of this state aggregate an immense area of approximately 266,857 acres, making a field so large and an industry presenting so many details that it is possible to look back over the work and see where more service could have been rendered to the public, if we had had more inspectors, better means of transportation and more adequate horticultural laws. However, with the lack of sufficient inspectors and county assistance hitherto available, cut off, the work of the district inspectors in the orchards, has, to say the least, resulted in the maximum service in point of results obtained. As now carried on the field work in order to accomplish the desired results, is operated from two different angles:

1. *Educational Work in the Orchards.* More than 95 per cent of the work done in the orchards being of an educational nature, the inspector is called upon to identify orchard pests, to prescribe control measures for the same and to offer whatever measure of educational assistance the opportunity presents. The identification of pests includes the diseases with which the orchardist has to cope, either fungous, insect or bacterial, and recommendations for effective means of control. In the progressive fruit sections of this state, advisory work of this nature is in so great a demand that the services of trained horticultural inspectors are very necessary.

2. *Police Duties.* The district inspector is called upon very frequently to enforce the statutory regulations providing for the protection of the fruit grower, and principally by the commercial fruit grower who sees a menace to his orchard in the spread of a pest that may effect a nearby orchard, or his own.

In a report of this kind, no detailed report of all the districts of the state is possible. Such a report would necessarily cover a vast amount of technical matter and be unduly long because of the variety of pests affecting crops produced in the state.

The work of the Horticultural Division during the past year has shown a remarkable increase in the inspection of orchards although there has been a slight decrease in amount of necessary nursery inspection due to decrease in nursery plantings. The spread of disease in the orchards of some districts of the state, particularly Eastern Washington, has obliged us to increase the field force to the utmost, and exert every energy through our inspectors and the Protective Associations to keep pace with the spread of pear blight. Although as reported by the inspectors it was necessary to pull out 6.000 trees in Yakima, 200 in Benton County, 1,500 in Walla Walla County, 2,250 Spokane County, 20 Wenatchee, 100 Whitman, and 300 Stevens and Ferry Counties, period April 1 to July 1, on account of being too badly injured from blight to be saved, it is safe to say that the rigid inspection maintained and the destruction of infected trees or parts thereof has prevented what might easily have been a very serious spread of the disease. The inspectors who have taken an active part in the pear blight work are F. E. DeSellem and A. H. Harrison of North Yakima; Luke Powell, Prosser; C. W. Gilbreath, Walla Walla; O. T. Clawson and Earl Barnhill, Wenatchee; J. H. Brislawn and Stanley Armstrong, Spokane; W. B. Harris, Garfield; Wm. Olson, Husum; and W. T. Ferguson, Kettle Falls.

Inspector Clawson of Wenatchee and Assistant Barnhill have done excellent work in Chelan, Douglas and Okanogan Counties. The very heavy plantings in Douglas and Okanogan Counties in the past are now growing into vast areas of commercial orchards and there should now be more inspectors for that district.

The Wenatchee business men saw the necessity for efficiency in covering the district and purchased a Ford car for former inspector Darlington's use, which after Mr. Darlington's resignation, was turned over to his successor, Mr. Clawson. The Wenatchee inspectors have also been extremely fortunate in having an opportunity to share their office with two scientific men from the U. S. Department of Agriculture—D. F. Fisher, Plant Pathologist, and E. J. Newcomer, Entomologist. These men with Inspectors Clawson and Barnhill, who are also college graduates, are thoroughly appreciated by the Wenatchee fruit growers.

The work of the Yakima office was greatly assisted by the $4,500 appropriation made by the county commissioners at the urgent request of business men and fruit growers. Out of this appropriation the purchase of three Ford cars was authorized and in addition to this the fruit growers raised sufficient funds among themselves for the purchase of another car after it was shown that one inspector mounted could do the work of three on foot.

In Benton County the fruit growers also insisted that their inspector, Luke Powell, be provided with a Ford. This was done and Mr. Powell covers quite efficiently the counties of Benton, Franklin and Adams.

Volunteer crew of the Lower Natches Valley Fruit Protective Association. These men are pulling together in the pear blight work and have the community's interest at heart.

Eighteen automobiles filled with business men of North Yakima, Sunnyside and Prosser on a blight inspection tour of the Yakima valley to get in touch with the pear blight situation.

GENERAL REPORT OF INSPECTIONS MADE OF NURSERY STOCK FROM FOREIGN COUNTRIES BY HORTICULTURAL DIVISION, STATE DEPARTMENT OF AGRICULTURE.

In addition to the large amount of nursery stock grown within this state and the large quantity shipped into Washington from outside states the Horticultural Inspectors of our State Department of Agriculture have inspected during the period October 1, 1913, to June 15, 1914, 426 cases of nursery stock containing a total of 808,102 plants grown in foreign countries and destined to Washington points. The attached tabulation of shipments shows the number of cases shipped to the different distributing points and the foreign countries from which they were shipped.

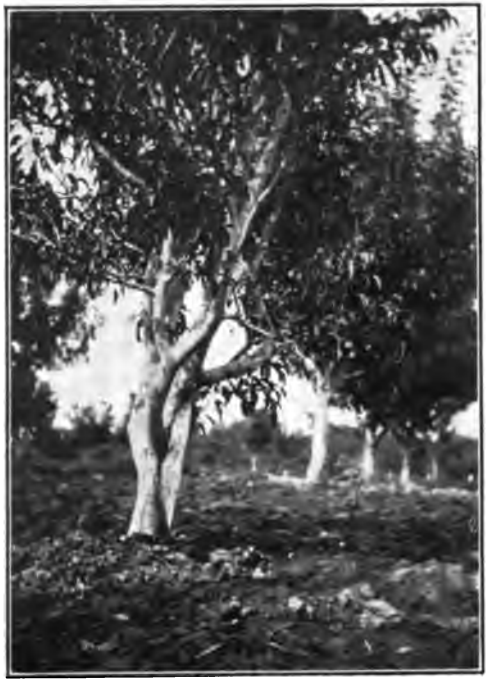
The inspection of these foreign shipments is done under the general supervision and in co-operation with the Federal Horticultural Board, Washington, D. C. To the Horticultural Division of the Department of Agriculture of this state is left the entire responsibility for the inspection at destination of importations of foreign nursery stock into the State of Washington. The Federal Horticultural Board issues permits for the importation of foreign nursery stock and upon its arrival at the port of entry (usually New York, Seattle, Portland or Tacoma) complete information is furnished the Chief of the State Horticultural Division, Olympia, giving the origin, name of importer at port of entry and consignee, quantity and kind of nursery stock, number of cases and marks and numbers on cases.

The Federal Horticultural Board furnishes this information to this office on regular report forms which are also spaced for state inspectors' return report to the Federal Horticultural Board after a very careful inspection has been made by our Inspector. The purpose of rigid inspection of nursery stock from foreign countries is to intercept the various pests likely to be introduced.

The federal act providing for co-operative work between Federal and State Horticultural Inspectors has greatly stimulated the foreign shippers to make a closer inspection of their stock before shipping. The results of this are shown in the general quality of the imported nursery stock and its more general freedom from infestation. However, several serious infestations were intercepted which otherwise might have become a serious menace to our horticultural industry.

On inspection of the above mentioned 426 cases of nursery stock infestation of different kinds were found by our Inspectors as follows:

Dec. 19, 1913.	Shipment of 4 cases of ornamental trees from Japan contained two infestations of Wistaria gall fly.—(Agromyza websteri.)
Jan. 8, 1914.	Shipment of 31 cases of woody plants from Japan contained 85 plants infested with Wistaria gall fly.



A nice piece of work on the trunk of this Winter Nellis saved the tree. Such cases as this impressed it upon the minds of the inspectors forcibly that the gouge is a necessity in detecting blight in the trunks of this variety. This work was done during the dormant season.

Some of the tools used by the volunteer crews of business men. Showing an assistant inspector who has the care of this lot of equipment. These tools were used by the Sunnyside business men.

tions of control methods for pear blight, powdery mildew, apple and pear scab, coddling moth, root rot, rosy aphis and scale insects.

FRUIT PROTECTIVE ASSOCIATIONS.

During the past year the appearance of fire blight in the commercial orchards of the Yakima Valley made an unprecedented demand on the limitations of this division, both because its appearance was manifestly so alarming and because the assistance heretofore rendered by counties had been cut off by the repeal of section 3133 or Remington and Ballinger's code, thereby preventing county commissioners from appropriating money for horticultural work locally. It immediately became apparent that nothing short of an organized campaign among growers themselves, backed up by community interest with the work well directed by horticultural inspectors as to uniform methods. and co-operation would cope with the situation and bring about the desired results of a thorough clean-up of hold-over cankers before blooming time.

The plan of Fruit Protective Associations was determined upon and on December 11th, 1913, the head of the horticultural division took the matter up actively with the fruit growers of North Yakima by proposing the general plan for protective associations at a blight meeting of the Broadway fruit growers. F. E. De Sellem, district inspector, acted as chairman in the temporary organization and together with Ben Brown and O. T. Clawson, then assistant inspectors, outlined the plans and details further in each district in Yakima County as the process of organization went on.

In the Broadway district where the first organization was completed, J. S. Schwartz and C. W. Pinkerton unhesitatingly branded such organizations a necessity and endorsed the practicability of the proposed plans. To their efforts in no small measure is due the success of the first meeting both because of the excellent impetus they assisted in giving the working plan and the interest with which they worked with the inspectors' office in arranging details for their local organization.

A president and secretary was elected together with an executive committee and chairman of districts, into which the area of the Association was divided. They acted co-operatively with the inspectors in matters affecting the situation, made recommendations, and assisted in the details of carrying them out, even to securing the labor with which to clean up an infested orchard. In this manner the district inspector was backed up not only by a large army of unpaid assistants, but by an active public sentiment. From the first meeting the movement spread rapidly until there were 36 such associations in Yakima County and six in Benton.

In order to get the local associations effectively organized it was necessary to hold at least three meetings with each association. At the first one, the organization was perfected, officers elected, districts outlined and district chairman named for each section or unit; at the second, orchard demonstrations were held under the direction of the district inspector and his immediate assistants showing the necessity tree surgery and the care that must be exercised in all the details of the work; at the third, verbal reports of the blight situation in each district inspector and his immediate assistants showing the necessary notes on the work being done. In the main the districts were well organized and it was an easy matter to call the associations together later as necessity became apparent, and many of these later meetings were held with most beneficial results.

NECESSITY OF ORGANIZATION.

On account of the manner of dissemination of pear blight and the importance of uniform control methods, this disease is peculiarly a community problem. In recent years it has been proved quite satisfactorily that the control of pear blight is practical where all the pear and apple growers of a district work together and in co-operation with an efficient corps of orchard inspectors. Pear blight must be cut and disinfected properly or serious loss is likely to result from unintelligent or careless cutting. Every orchardist should realize his responsibility in regard to pear blight, and that it is obviously of vital importance to all growers living in a blight infested district to see that every effort is made to control the disease. It was necessary therefore to show in detail the practical advantages of such an organization. To do which, it was necessary to impress strongly that pear blight in any tree, in any orchard, in any community is a source from which the disease may be carried by insects, not alone to other trees in that orchard, but to distant orchards and other communities. It was necessary to firmly establish in the mind of every orchardist that the diseased bark usually gives off small beads of exudate, which under favorable conditions may accumulate sufficiently to drip from the diseased areas. This sticky material is filled with countless numbers of pear blight bacteria (Bacillus amylovorus) and its sweet taste attracts insects, such as ants, honey bees, flies, aphis, etc. These insects are common feeders on the exudate and common carriers of the disease as well. The nectar of blossoms, too, furnishing a very good medium for growing blight, it had to be shown that all blossom infection could well come from the infection carried by insects from the germ-laden ooze of some diseased tree, or from other infection of the same tree, and the interested person was not long in learning that "dirty" insects were no respectors of property lines or fences.

It will therefore be seen that to control the spread of this disease the sources of infection must be reduced to the minimum. Theoretically if every hold-over canker could be cut and burned in the spring time before the sap begins to flow, the disease would be stamped out at once, but practically speaking the disease is controlled rather than eradicated, and every year that the community work is done to control the blight, it will mean thousands of dollars' worth of both fruit and property saved to the growers of the district. With such a general summary it can be appreciated that the control of pear blight is purely a community problem.

The Fruit Protective Association idea has taught that much is to be gained from the spirit of healthy co-operation. Before blossoming season arrived last spring some of the associations declared a "Blight Week" during which everyone living within the boundaries of the association, was to hunt for, cut out and burn as far as possible every vestige of blight diseased timber. Further than this each president and chairman after making a thorough search for infections in his own trees would go across the fence and road to inspect his neighbors' place for blight that might have been overlooked.

To the chairman of the different sub-districts, state inspectors distributed over 300 yards of yellow bunting which was torn into strips and tied on each diseased branch found, to indicate any trace of blight, thus marking trees for attention in the clean-up, and calling the owner's attention to it. In other words, the Fruit Protective Association plan of tree-to-tree inspection amounts to several pairs of eyes inspecting each tree for blight and it means the growers are interested or they would not be organized. It also means a more general adoption of the proper control methods.

This organization work means also increased efficiency to the Department, inasmuch as one inspector can carry his work to many people at once, instead of formerly by one at a time. It also is of educational value for not infrequently do these meetings take the form of open discussions where any one in attendance may gain additional knowledge from the questions asked and experiences related by his neighbor. It means an exchange of both practical and scientific ideas. On the other hand the state inspectors have been able to get most excellent results, before starting legal proceedings, on a neglected orchard, by getting the local committee in action and carrying out the provisions of the statute. In this way local pride has been the controlling factor, and it seems to have worked quite effectively. Such assistance gives the Department inspectors opportunity to do their most important work in the most important places, and devote much time to demonstrations.

From the foregoing explanation of Protective Associations and their value in coping with the blight situation, it can readily be seen that thousands of dollars' worth of damage has been prevented in the orchards of the commercial districts, and thousands of dollars saved on the fruit crop.

Unorganized, many of these orchards would have been badly injured or a total loss, and ruined just as many Eastern orchards have been, by neglect to control blight in time. Organized, the inspectors have been able to labor unceasingly among the associations advising uniform control measures, and arousing the enthusiasm that has thus far been quite successful. Wherever a Fruit Association exists, there also exists a healthy spirit of co-operation and a willingness to carry out the fight against the disease before it is too late. Experience with these Protective Associations during the past seven months has demonstrated their success for the dormant season clean-up. During the growing season, however, valuable assistance is rendered by volunteer blight crews, but practically all the orchard inspection is then thrown on the inspectors.

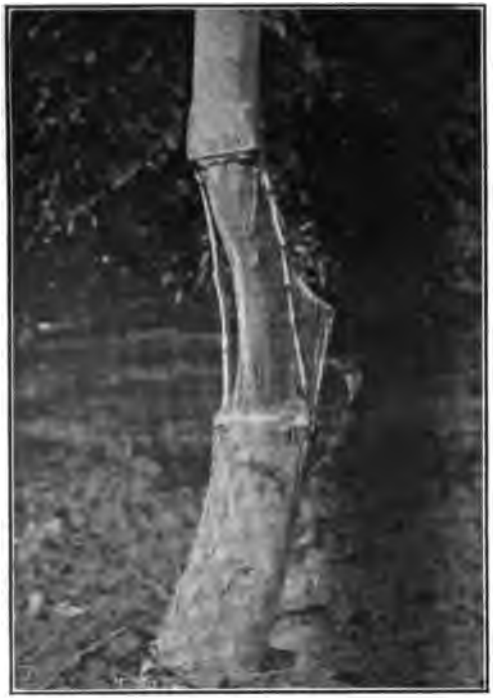
These associations in the Yakima, Wenatchee, Touchet, Spokane and Walla Walla Valleys have demonstrated that not only are their constituents willing to fight to protect their crops and to win over the blight, but are appreciative of every effort put forth to assist them. No small amount of credit is due the officers of each association, for upon them has fallen much actual work, and it is a foregone conclusion that a continuance of the practice of co-operating state district inspectors with these associations will be worth while.

In the Yakima Valley the Fruit Protective Associations were in operation before blooming time when the principal spread of the disease was accomplished and yet there was sufficient blight left at blooming time to allow the widespread distribution of the disease which was fought so vigorously.

To the writer the spread of blight does not mean that the work of the Protective Associations was without value but rather that the organized work should be made more thorough. The value of fruit and property saved from further blight injury during the past season by the inspectors and the Fruit Protective Associations in the Yakima Valley alone, was easily double in amount to the state appropriation made for horticultural purposes.

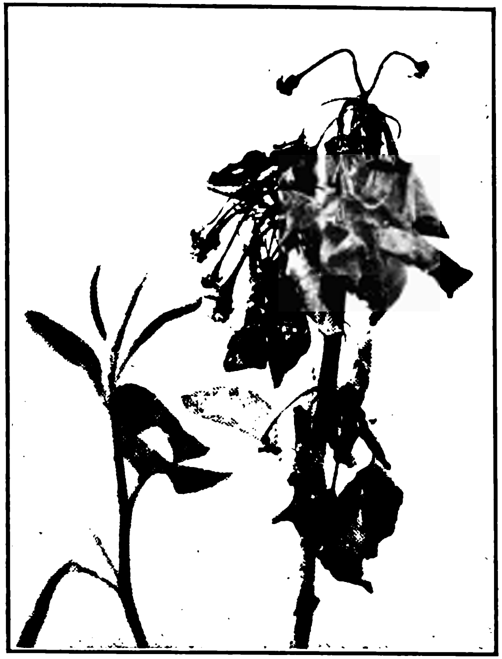
VOLUNTEER BLIGHT CREWS.

The lower Nachez Valley Fruit Protective Association was the first to make use of volunteer blight crews. About May 19th a member of the local association found that new blight was showing up plentifully in the Spitz block of his sixty-acre orchard. He phoned at once to the Horticultural Inspector's office and an hour later the inspector arrived to consult with the owner. After deciding what should be done the question of securing reliable labor to do the work was puzzling the owner and finally he made the statement to the inspector that he would pay $3.00 per day for reliable men if the inspector would gather a crew. The inspector went at once to the president of the local Fruit Protective Association and explained the situation. The plan of calling for volunteers from the local association was decided upon and the two men mounted the motorcycle for a quick call on some of the members. In 45 minutes a crew of 15 interested fruit growers were assembled at the orchard for duty. The work was completed at 4:00 p. m. the following day and upon its completion the owner asked the crew to come to the house where he would write



Showing "bridging" to save the tree girded by blight. After the diseased area was sufficiently cut out the exposed wound was disinfected with solution of corrosive sublimate.

Bridge-grafts were then used to bridge over the wounded area. This operation was successful but more bridges would have been better. (Work done in March, 1914).



Pear Blight is disseminated chiefly by insects at blossoming time. Insects may become "dirty" with pear blight germs by feeding on the exudate from hold-over cankers, in which there are millions of bacteria, and spread the disease in visiting the blossoms for nectar. Nectar seems to be a good medium for the disease, and after innoculation the bacteria find an easy access through the nectaries into the bark and cambium producing the "blossom blight" shown above.

their pay checks. Each man very courteously thanked the owner for his offer but firmly refused to accept pay saying that they responded to the call for volunteers thinking of the welfare of the district and of their own orchards in particular and that they might be next to need speedy action to prevent serious blight injury. This was almost an extreme case of co-operation but shows one of the uses of the Fruit Protective Association with the assistance of the inspectors when the membership is made up of the Naches Valley type of fruit growers.

In Prosser the business men were interested in the volunteer plan to get quick results and help those who needed assistance in cutting blight. About 60 business men enlisted with the inspector for volunteer work. The number was divided into three crews and one crew went out every morning making it every third morning out for each crew. The plan became known as the "Prosser method" and was adopted later by the business men of Grandview and Sunnyside.

Although it was necessary for these business men to be in their autos very soon after 4 a. m. in order to be in the orchard at 5, it was thoroughly enjoyed and much interest was taken in the work. In starting these crews the inspectors were careful to work with the members and demonstrate how the work should be done. The business men's crews did very effective work and it was a noticeable fact that in their cutting they were exact and careful to disinfect.

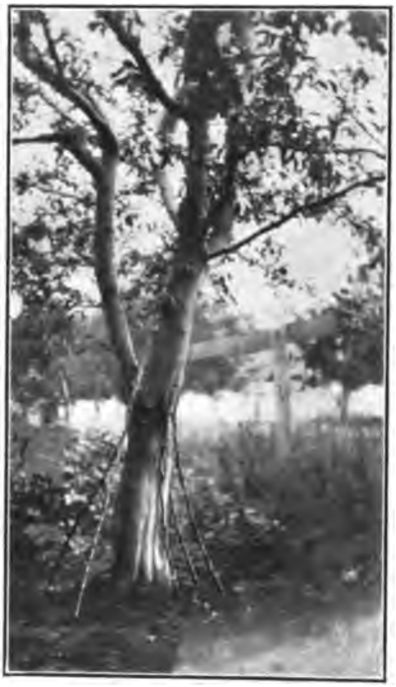
Our inspectors have quite generally found that there are three reasons any one of which may have made it desirable to issue calls for volunteers.

1. On account of difficulty of otherwise getting reliable labor.
2. For quick action and community interest.
3. On account of owner's financial condition.

Growers and business men in other parts of the state have responded to the call for co-operative volunteer work and following is a partial list of acreage where volunteer work was done:

LOCATION	Number of acres	Number of times out and date	Reason No.	
Naches Valley......	10 A.	May 19..........	No. 2	12 times out for fruit growers, usually working all day.
Naches Valley......	10 A.	June 2..........	No. 3	
Naches Valley......	10 A.	June 19.........	No. 3	
North Nob Hill....	10 A.	June 3..........	No. 2	
Broadway.........	5 A.	April 1-June 15.	No. 3	
Terrace Heights...	10 A.	June 10.........	No. 2	
Orchardvale.......	20 A.	2 days—June...	No. 3	
Fruitvale..........	10 A.	May 20.........	No. 3	
Oowichee...........	5 A.	June 20.........	No. 3	
Moxee.............	4 A.	June 22.........	No. 3	
Euclid..............	5 A.	June 19, July 1, 2, 3.	Nos. 1-2-3	25 Sunnyside business men working 5:00 to 8:00 a. m. Out two weeks, three hours per day.
Sunnyside..........	6 A.	June 24.........	Nos. 1-2-3	
Sunnyside..........	8½A.	June 22.........	Nos. 1-2	
Sunnyside..........	5 A.	June 23.........	Nos. 1-2	
Sunnyside..........	3 A.	June 26.........	Nos. 1-2	
Sunnyside..........	7 A.	June 29.........	Nos. 1-2	
Granger............	5 A.	2 days..........	Nos. 2-3	Lincoln Protective Ass'n. fruitgrowers.
Euclid..............	2 A.	1 trip...........	No. 2	Grandview business men, 5:00 to 8:00 a. m. One week, 3 hours per day.
Euclid..............	5 A.	2 trips..........	No. 2	
Euclid..............	5 A.	1 trip...........	No. 2	
Grandview.........	7 A.	1 trip...........	No. 2	
Belma..............	5 A.	1 trip...........	No. 2	
Cashmere..........	30 A.	2 orchards, total, 5 days.	No. 2	Fruit growers. 1 day, 19 men. 12-52-50-20 men.
Opportunity.......	25 A.	June 10.........	No. 2	8-12 men, 1 day per orchard. All fruit growers.
Greenacres.........	10 A.	June 4..........	No. 2	
Meadow Lake......	15 A.	June 28.........	No. 2	
Opportunity.......	15 A.	June 25.........	No. 2	
Prosser............	12 A.	May 25, 26, 27, 28—130 hours. June 17, 18, 19, 20—94 hours.	No. 3	Prosser business men, 5:00 to 8:00 a. m.
Prosser............	6 A.	May 19-20—68 hours.	No. 3	
Prosser............	30 A.	May 18-June 16—52 hours.	No. 1	
Prosser...........	10 A.	May 21—27 hours.	No. 1	
Prosser............	30 A.	June 8, 10, 11, 12, 13—141 hrs.	No. 1	
Prosser............	10 A.	June 9—27 hrs..	No. 3	
Prosser............	12 A.	22½ hours.......	No. 1	

Volunteer crew of Orchardville Fruit Protective Association, out to assist a neighbor control pear blight in his orchard for their own protection.



To save this tree it was necessary to skin all the bark off the trunk twenty inches above the ground-line and ten to fourteen inches on the roots to remove the diseased parts. The exposed area was disinfected with solution of corrosive sublimate and six new pear trees planted around the old tree. The top of the new trees were grafted into the healthy bark of the old tree, thus providing a new root-system for the old tree. After a few days when it could be determined whether or not the diseased area had been cut sufficiently, an application of shellac was applied to the wounded area. The operation was successful and tree is carrying its crop of pears. (Work done in March, 1914.)

PAID BLIGHT CREWS.

In some localities there are here and there disinterested parties to whom the spirit of co-operation, advice or help, does not appeal. To handle such negligent cases it has been necessary to file criminal complaint or to do the work in accordance with Sections 3098 and 3099 Remington and Ballinger's Code, and bring civil action for collection of costs.

The satisfactory operation of such civil action was hampered by the section of the state law requiring all moneys collected to be turned into the general fund. This made all such costs payable out of the horticultural appropriation and therefore prohibitive if the inspection work was to be carried on. To provide ways and means for making Sections 3098 and 3099 operative, the president of the Yakima Valley Fruit Protective League, Mr. C. De Vere Fairchild, called a meeting of the presidents of organizations such as the Yakima Valley Business Men's Club, Commercial Club, Executive Board Fruit Protective League, and officers of several of the selling organizations to meet with the Attorney General and Commissioner of Agriculture. The plan decided upon was to raise a Yakima Valley Blight fund. Accordingly a Blight fund amounting to $3,094.50 was raised by the fruit growers and business men giving their personal notes to bear interest at the rate of 8 per cent for nine months.

Messrs. H. M. Gilbert, F. E. Sickels and A. S. Congdon were appointed to act as trustees of the Blight fund. The trustees then put the notes up as collateral where they were able to borrow money as needed from the banks to pay blight cutters. In other words, this money which is a sort of revolving fund was loaned for the state's use until the legislature can reimburse the trustees. Certificates of labor were prepared by the Attorney General which were used by the trustees in paying for labor, and the total costs against any place were to constitute a lien to be collected by the state. With this Blight fund Inspector F. E. De Sellem and his assistants cleaned up eighteen orchards at a cost of $1,183.63.

It is to be expected that these people who neglected to do the work themselves will object to paying the costs, but it is impossible for the state to do the work as cheaply as they could have done it themselves. There is a decided advantage, however, in the greater cost and in the provision of the Blight fund to do such work in its very stimulating effect on delinquent and negligent blight cutters. A reasonable revolving fund would permit an inspector to get immediate results when such an action seems necessary.

CASE PENDING FOR SUPREME COURT DECISION.

For a number of years there has been a general feeling that a weakness existed in that part of the horticultural law making it compulsory to clean up an infested orchard upon notice from the horticultural inspector and whether or not the inspector could legally cause the orchard to be disinfected at the owner's cost. Criminal complaints have been filed against a few neglectful owners during the last seven years since the passage of the present law, but none so far to our knowledge have been carried higher than the Superior Courts. Some have been lost and some won by the inspectors. We are now practically assured of a case going to the Supreme Court and which will decide whether or not the inspector has the right to enter premises and cause the work to be done at the owner's cost.

After arguments had, in the case of J. H. Carstens vs. F. E. De Sellem, Geo. L. Hagler, S. W. Means, W. H. Johnson and A. H. Harrison, the Yakima County Superior Court on the 27th day of May, 1914, entered an order overruling demurrer interposed by plaintiffs, which was favorable to the action of the inspector. On the 13th day of July, 1914, the court entered a judgment dismissing plaintiff's complaint and from this judgment plaintiffs have appealed to the Supreme Court where it will be heard in October. If the Supreme Court also upholds the actions of the inspectors for actually disinfecting the orchard at the expense of the owner it will be most gratifying and will demonstrate a definite plan of handling neglected fruit trees which are menacing nearby commercial orchards. If the Supreme Court passes judgment unfavorable to the action of the inspectors then we shall ask the next legislature for the necessary amendment.

FRUIT PROTECTIVE ASSOCIATIONS AND OFFICIALS

Benton County.

Walnut Grove District, Prosser.
L. M. Marshall, President; F. O. Seymour, Secretary.
Prosser District, Prosser.
D. C. Bunn, President; C. W. Harris, Secretary.
Valley Hights District, Prosser.
A. M. Brainard, President; C. G. McDonald, Secretary.
Kiona District, Kiona.
F. S. Hedger, President; Chas. E. Morgan, Secretary.
Kennewick District, Kennewick.
E. O. Keene, President; D. E. Stull, Secretary.

Chelan County.

Peshastin Fruit Protective Association.
F. A. Wingate, Pres., Peshastin; H. W. Stark, Sec., Peshastin.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	M. W. Stark.	5.	A. G. Stage.
2.	E. K. Harvey.	6.	J. A. Warman.
3.	H. A. Harvey.	7.	J. W. Corcoran.
4.	Ralph Curtis.	8.	C. W. Wright.

Cashmere Fruit Protective Association.
J. C. Parsons, Pres., Cashmere; H. J. Olive, Secretary, Cashmere.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	George Loudenbach.	7.	Clarence Miller.
2.	Homer Lesch.	8.	E. E. Gould.
3.	Matt. Hickey.	9.	J. F. Sugrue.
4.	H. G. Bohlke.	10.	C. M. Erickson.
5.	E. E. Ligner.	11.	C. G. Carey.
6.	Barney Losch.	12.	Bert. Suthell.

Monitor Fruit Protective Association.

Harry Baker, Pres., Monitor; Will Mann, Sec., Monitor.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	Fred Powers, Wenatchee.	3.	Dr. F. M. Roys.
2.	Walter Richardson.	4.	E. E. Simonson.

Beacon Hill Fruit Protective Association.

E. S. Gill, Pres., Wenatchee; L. D. Merritt, Sec., Wenatchee.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	M. K. Wilkinson.	10.	Frank Goss.
2.	W. T. Irwin.	11.	G. W. Lamer.
3.	Ernest Leedy.	12.	S. C. Gochley.
4.	Fred Olds.	13.	A. B. Peters.
5.	C. W. McMullen.	14.	E. J. Haas.
6.	Rudolph Leonardy.	15.	R. T. Lovall.
7.	F. E. Galinger.	16.	C. A. Leedy.
8.	C. A. Fenin.	17.	F. E. Schmitten.
9.	L. E. Ulrich.		

North Wenatchee Fruit Protective Association.

H. Heidenhain, Pres., Wenatchee; J. Cowan Wilson, Sec.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	J. R. Phipp, Wenatchee.	5.	F. E. Ping.
2.	F. DePuy.	6.	O. G. Fish.
3.	W. H. Hall.	7.	J. S. Richards.
4.	J. W. Epley.		

West Wenatchee Fruit Protective Association.

Jay A. Musson, Pres., Wenatchee; R. R. Pfau, Sec., Wenatchee.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	C. A. Pearsall.	6.	Arthur Ball.
2.	G. C. Eikelberner.	7.	D. W. Chapman.
3.	C. M. Witherald.	8.	George Farnwell.
4.	Geo. Scheidmantel.	9.	William Murray.
5.	W. K. McKenzie.		

South Wenatchee Protective Association.

Guilford Mars, President; S. O. Poole, Secretary.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	V. L. Garner.	4.	Sam Johnson.
2.	L. M. Cundiff.	5.	Sam. Frye.
3.	Thomas Lister.		

Bee Hive Fruit Protective Association.

W. F. Meir, Pres., Wenatchee; Isadore Dickinson, Wenatchee.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	H. P. Johnson.	3.	Theodore Zimmerman.
2.	George Pitcher.	4.	Eli Zimmerman.

Chelan Fruit Protective Association.

Harold W. Watson, Pres., Lakeside; L. E. Ludwig, Sec., Lakeside.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	Leonard Olive, Chelan.	4.	Wm. Isenhart.
2.	Wallace Kinley, Chelan.	5.	Ben Smith.
3.	R. P. Wright, Chelan.		

Dryden Fruit Protective Association.

A. N. Hall, President, Dryden.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	E. Z. Cornwall, Cashmere.	3.	Archie Smith, Dryden.
2.	Dr. Burbank, Dryden.	4.	S. S. Hall, Dryden.

Walla Walla County.

In Walla Walla county the associations took the form of unions and instead of organizing in small districts, organized on a larger scale with fewer divisions.

Walla Walla County Union.

Paul Weyrauch, Pres., Walla Walla; Virgil Patton, Sec., Walla Walla.

District Chairman	*District Chairman.*
Walla Walla—A. J. Gillis.	Gardena—E. C. Burlingame.
Blalock—W. S. Offner.	Prospect Heights—J. W. Landon.
College Place—R. Peterson.	Attalia—J. A. Dunham.
Mill Creek—Fred Roane.	Waitsburg—J. D. Taggard.

Columbia County

Columbia county was organized along the same lines as Walla Walla.

E. S. Ryerson, Pres., Dayton; C. W. Gilbreath, Sec., Walla Walla.

District Chairman and P. O.	*District Chairman and P. O.*
Columbia—J. L. Dumas, Dayton.	Mountain—W. W. Ward, Dayton.
Dayton—W. C. Godard, Dayton.	Tucannon—O. A. King, Marengo.
Upper Touchet—Jas Allen, Dayton.	Patit—C. H. Read, Dayton.

Spokane County.

Pasadena Park Fruit Protective Association.

E. Storms, Pres., R. 8, Spokane; T. H. Beyer, Sec., R. 8, Spokane.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	W. M. Thompson, R. 8.	3.	H. J. Duffey, R. 8.
2.	F. W. Lots, R. 8.	4.	W. C. Pittain, R. 8.

Opportunity Fruit Protective Association.

A. J. Baldwin, Pres., Opportunity; W. S. Kelsey, Sec., Opportunity.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	William Rawson.	5.	C. W. Teubner.
2.	C. H. Ollinger.	6.	F. E. Williams.
3.	A. H. Cowan.	7.	A. J. Baldwin.
4.	T. C. Lermy.	8.	C. W. Carpenter.

Vera Fruit Protective Association.

W. M. Godfrey, Pres., Vera; —. —. Bienhlman, Sec., Vera.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	A. B. Davis.	5.	H. A. Herbath.
2.	—. —. Kirshaw.	6.	A. N. Sommers.
3.	J. J. Maxey.	7.	V. Wildein.
4.	T. N. Wisdom.		

Greenacres Fruit Protective Association.

W. W. Phillips, Pres., Greenacres; F. F. Brothero, Sec., Greenacres.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	H. A. Filler.	3.	E. R. Dalton.
2.	C. B. Sawyer.	4.	J. A. McMillan.

Otis District is affiliated with Otis Commercial Club, Joe Goodner, President.

Steno Fruit Protective Association.

Dr. S. F. Bennett, Pres., R. 1, Opportunity; Lloyd B. Heffner, Sec., R. 1, Opportunity.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	H. Bennett.	5.	A. B. Blessing.
2.	J. C. Brown.	6.	Jos. Ulowitz.
3.	Sidney Smith.	7.	L. D. Helfner.
4.	Fred Lundin.	8.	William Anderson.

Wild Rose Fruit Protective Association.

W. E. Strong, Pres., Deer Park; Ernest King, Sec., Deer Park.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	R. M. Cline.	3.	Andrew King.
2.	James Morris.	4.	Henry Roberts.

Five Mile Prairie Fruit Protective Association.

Fred Fish, Pres., R. 7, Spokane; Wm. Deffner, Sec., R. 7, Spokane.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	C. T. Johnson.	3.	B. W. Graybill.
2.	J. H. Van Wart.		

South Moran Fruit Protective Association.

W. E. Stillson, Pres., Keisling; L. E. Dyar, Sec., Keisling.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	Henry Torrence.	4.	Elbridge Bacon.
2.	F. W. Caldwell.	5.	F. A. Schoedel.
3.	H. E. Dean.		

Meadow Lake Fruit Protective Association.

G. E. A. Bond, Pres., Cheney; Hamilton Murray, Sec., Cheney.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	F. W. Shafer.	4.	W. Petts.
2.	F. Wetherall.	5.	H. Murray.
3.	W. R. Stearns.		

FRUIT PROTECTIVE ASSOCIATIONS AND OFFICIALS.

YAKIMA COUNTY.

Broadway Fruit Protective Association.

C. W. Pinkerton, Pres., R. 7, Phone 1307J, North Yakima; J. R. Schwartz, Sec., R. 2, Phone Sub. 1715, North Yakima.

Div.	*Chairman.*	*Div.*	*Chairman.*
"A"	J. R. Schwartze, R. 2, North Yakima.	"D"	M. A. Chandler, R. 7, North Yakima.
"B"	E. W. Flach, R. 2, North Yakima.	"E"	C. W. Pinkerton, R. 7, North Yakima.
"C"	E. H. Detloff, R. 7, North Yakima.		

South Nob Hill Fruit Protective Association.

W. C. Hamilton, Pres., Nob Hill Boulevard; O. K. Conant, Sec., R. 2, North Yakima.

Div.	*Chairman.*	*Div.*	*Chairman.*
1.	O. L. Franch.	5.	O. K. Conant, R. 2.
2.	James Suter, R. 2.	6.	W. H. Shaver.
3.	W. C. Hamilton.	7.	O. L. French.
4.	H. R. Humphrey.	8.	L. Z. Karr.

NOB HILL FRUIT PROTECTIVE ASSOCIATION.

Dr. Granville Lowther, Pres., 407 Miller Bldg., North Yakima; C. H. Hinman, Sec., Miller Bldg., North Yakima.

Div.	*Chairman.*
9.	T. S. Johnson, R. 4, North Yakima.
10.	B. F. Young, R. 4, North Yakima.
11.	Geo. Clark, R. 4, North Yakima.
12.	J. E. Shannon, R. 4, North Yakima.
13.	M. N. Richards, R. 2, North Yakima.
14.	Wm. Petzel, R. 4, North Yakima.
15.	W. F. Morgan, R. 4, North Yakima.
16.	W. F. Morgan, R. 4, North Yakima.
17.	C. E. Sanderson, 4. R, North Yakima.
18.	W. F. Morgan.
19.	Geo. H. Glazier, R. 4, North Yakima.
20.	Daniel Webster, R. 4, North Yakima.
21.	E. W. Brackett, R. 4, North Yakima.
22.	C. H. Hinman, R. 4, North Yakima.
23.	Wm. R. Newell, R. 4, North Yakima.
24.	H. H. Lombard, R. 4, North Yakima.
25.	Dr. Granville Lowther, 407 Miller Bldg., North Yakima.
26.	Chas. E. Druse, North Yakima.
27.	Robt. I. Burrill, R. 4, North Yakima.
28.	Jacob Laible, R. 4, North Yakima.
29.	Dr. W. H. Boone, R. 4, North Yakima.
30.	John C. Reeve, R. 4, North Yakima.
31.	Dr. D. R. Moysey, R. 4, Box 240, North Yakima.
32.	Bert Millhouse, R. 4, North Yakima.

NORTH NOB HILL FRUIT PROTECTIVE ASSOCIATION.

A. M. Pearce, Pres., R. 2, Nobb Hill, North Yakima; Roy Bullan, Sec., R. 2, North Yakima.

Div.	*Chairman.*
33.	W. H. Strausz, R. 2, North Yakima.
34.	H. G. Peck, R. 2, North Yakima.
35.	W. M. Nelson, R. 2, North Yakima.
36.	E. D. Palmer, R. 2, North Yakima.
37.	W. L. Flagg, R. 2, North Yakima.
38.	A. E. Glenn, R. 2, Box 56, North Yakima.
39.	Burr Flagg, R. 3, North Yakima.
40.	C. P. Cahoon, R. 2, North Yakima.
41.	Chester Miller, R. 5, North Yakima.

FRUITVALE FRUIT PROTECTIVE ASSOCIATION.

Howard Wright, Pres., R. 3, North Yakima; C. Devere Fairchild, Sec., R. 3, North Yakima.

Div.	*Chairman.*
42.	W. W. Scott, R. 3, North Yakima.
43.	G. W. Vaughn, R. 3, North Yakima.
44.	Frank Hood, R. 3, North Yakima.
45.	Howard Wright.
46.	Harry Plath, (Fruitvale) North Yakima.
47.	I. Young, (Fruitvale), North Yakima.
48.	C. M. Bird, (Fruitvale), North Yakima.

Selah Extension Fruit Protective Association.

M. L. Thomas, Pres., R. 1, Selah; L. C. Farr, Sec., R. 1, Selah.

Div.	*Chairman.*	*Div.*	*Chairman.*
49.	J. G. Hoisington.	53.	C. E. Mathis.
50.	L. F. Withee, R. 2.	54.	A. Langemack.
51.	Chas. Doyle.	55.	F. Horschell.
52.	W. K. Price.		

Central Selah Fruit Protective Association.

J. W. Adamson, Pres., R. 2, Selah, M. A. Gore, Sec., R. 2, Selah.

Div.	*Chairman.*	*Div.*	*Chairman.*
56.	Albert Olsen, R. 2.	59.	Mr. Boyle, R. 2.
57.	Theo. Steenburg, R. 2.	60.	Walter Cliff, R. 2.
58.	H. K. Davis, R. 2.	61.	Jim Lancaster, R. 1.

Terrace Heights Fruit Protective Association.

F. C. Getsch, Pres., R. 1, North Yakima; Lee Weston, Sec., R. 1, North Yakima.

Div.	*Chairman.*	*Div.*	*Chairman.*
62.	F. W. Duncan, R. 1.	65.	Whitney K. Adams, R. 1.
63.	Jess Reutter, R. 1.	66.	Jas. McAuley, R. 1.
64.	Carl Erickson, R. 1.		

Moxee Fruit Protective Association.

W. R. Duffield, Pres., R. 1, North Yakima; Jacob Postma, Sec., R. 1, North Yakima.

Div.	*Chairman.*	*Div.*	*Chairman.*
67.	J. J. Matterson, R. 1.	75.	Nat Weston (R. 1, Moxee City).
68.	T. A. Noble (resigned).	76.	A. Martin (R. 1, Moxee City).
69.	Chas. Schmidt, R. 1.	77.	Orlando Beck, R. 1.
70.	J. LaFramboise, Sr., R. 1.	78.	N. V. Turnley (R. 1, Moxee City).
71.	Henry Wayenberg, R. 1.	79.	Geo. Desmarais (R. 1, Moxee City).
72.	John Wayenberg, R. 1.	80.	D. Walters (R. 1, Moxee City).
73.	John Huibregtse, R. 1.	81.	Row. W. Parker (R. 1, Moxee City).
74.	R. Jongewaard, R. 1.		

West Nob Hill Fruit Protective Association.

A. S. Congdon, Pres., North Yakima; L. J. Zuerner, Sec., North Yakima.

Div.	*Chairman.*	*Div.*	*Chairman.*
82.	J. H. Broetje, R. 2.	87.	J. J. Wimer, (Nob Hill).
83.	F. Brown, R. 2.	88.	A. Lundstrum, R. 4.
84.	W. A. Coffin (Nob Hill).	89.	Edw. A. Bannister, R. 4.
85.	L. J. Zuerner, R. 2.	90.	G. W. Eastman, R. 4.
86.	W. D. Ingalls, R. 2.		

Parker Heights Fruit Protective Association.

Bruce Wees, Pres., R. 2, Wapato; A. A. Bowman, Sec., R. 2, Wapato.

Div.	*Chairman.*	*Div.*	*Chairman.*
91.	Bert Fletcher, R. 2.	93.	O. W. McMillan, R. 2.
92.	A. H. Irish, R. 2.	94.	C. A. Curtis, R. 2.

Orchardvale Fruit Protective and Improvement Association.

Wm. Smith, Pres., R. 1, Granger; Roy C. Brown, Sec., R. 1, Granger.

Div.	*Chairman.*	*Div.*	*Chairman.*
95.	Richard Hardell, R. 1.	97.	J. F. Snyder, R. 1.
96	Frank Nichols, R. 1.	98.	F. C. Thompson, R. 1.

Grandview Orchard Tracts Fruit Protective Association.

S. R. Roney, Pres., R. 1, Grandview; J. H. Stuckrath, Sec. R. 1, Grandview.

Div.	*Chairman.*	*Div.*	*Chairman.*
99	Dana Smith, R. 1.	102.	J. W. Moore, R. 1.
100.	S. R. Roney.	103.	A. L. Irish, R. 1.
101.	J. H. Stuckrath.		

Euclid Fruit Protective and Improvement Association.

S. T. Strong, Sec., R. 2, Mabton.

Div.	*Chairman.*	*Div.*	*Chairman.*
104.	C. M. Bean, R. 1, Grandview.	106.	F. T. Davidson, R. 1, Grandview.
105.	J. H. Ramsey, R. 1, Prosser.	107.	J. A. Scott, R. 2, Mabton.

Upper Naches Fruit Protective Association.

A. M. Otto, Pres., Naches City; W. S. Clark, Sec., Naches City.

Div.	*Chairman.*	*Div.*	*Chairman.*
108.	Earl Bailey.	111.	Fred Hess.
109.	T. E. Forsyth.	112.	L. B. Kinyon.
110.	LeRoy Pease.	113.	F. J. Kandle.

Grandview Fruit Protective Association.

A. R. McLane, Pres., Grandview; John Vanderpool, Sec., Grandview.

Div.	*Chairman.*	*Div.*	*Chairman.*
114.	S. C. Loop.	116.	F. A. Norton.
115.	Dr. W. A. Ingalls.	117.	J. M. Thompson.

Wide Hollow Fruit Protective Association.

J. C. Young, Pres., R. 4, North Yakima; Dr. A. H. Johnston, Sec., R. 2, North Yakima.

Div.	*Chairman.*	*Div.*	*Chairman.*
118.	Mr. French.	122.	Jas. Boyd.
119.	J. C. Young.	123.	A. H. Johnston.
120.	B. K. Ferris.	123½.	E. F. Alspach, R. 2.
121.	Max Garbe, R. 2, Box 41.	124.	H. T. Skinner.

Fairview Fruit Protective Association.

Ed Remy, Pres., R. 1, North Yakima; O. S. Hanson, Sec., R. 1, North Yakima.

Div.	*Chairman.*	*Div.*	*Chairman.*
125.	G. A. Kellett, R. 7.	129.	Chas. Simpson, R. 7.
126.	Harry Maxted, R. 7.	130.	Dalton Boggess, R. 1.
127.	Geo. Percival, R. 7.	131.	Clarence Starcher, R. 1.
128.	Homer Boggess, R. 7.	132.	T. A. Darby, R. 1.

Sunnyside Fruit Protective and Improvement Association.

Austin Woodyard, Pres., Sunnyside; S. J. Harrison, Sec., Sunnyside.

Div.	*Chairman.*	*Div.*	*Chairman.*
133.	F. B. Sheyock.	135.	Wilbur Smith.
134.	L. M. Lantz.	136.	Noah Shafer.

Lincoln Fruit Protective Association.

R. E. Pearse, Pres., R. 1, Granger; B. D. Thompson, Sec., R. 1, Granger.

Div.	*Chairman.*	*Div.*	*Chairman.*
137.	F. Cardin.	139.	W. A. Brown.
138.	A. J. Reise.	140.	C. Van Newhouse.

Ahtanum Fruit Protective Association.

Ernest Woodcock, Pres., Miller Bldg., North Yakima; J. D. Marsh, Sec., R. 4, North Yakima.

Div.	*Chairman.*	*Div.*	*Chairman.*
141.	C. A. Childress.	147.	J. D. Marsh.
142.	Robt. Smythe, R. 4.	148.	E. J. Woolsey.
143.	F. W. Woolsey, R. 4.	149.	C. H. Chandler.
144.	N. P. Hull.	150.	J. C. Hanson.
145.	Frank Jordan, R. 4.	151.	Ira Gano.
146.	D. A. Gillett, R. 4.		

Sawyer District Fruit Protective Association.

Wm. P. Sawyer, Pres., Wapato; E. A. Hewes, Sec., Wapato.

Div.	*Chairman.*	*Div.*	*Chairman.*
152.	Jesse Piland.	155.	E. A. Hewes.
153.	D. K. Smalling.	156.	E. A. Olsen.
154.	H. W. Sawyer.		

Pleasant Hill Fruit Protective Association.

Geo. Slade, Pres., R. 2, Selah; C. T. Manhart, Sec., R. 2, Selah.

Div.	*Chairman.*	*Div.*	*Chairman.*
157.	Paul Engman, R. 2.	160.	W. L. Baker, R. 2.
158.	W. I. Stone, R. 2.	161.	William Doepke, R. 2.
159.	Chas. Hancock, R. 2.	162.	Albert Anderson, R. 2.

Belma Fruit Protective Association.

E. L. Chapin, Pres., R. 2, Mabton; John A. Dudley, Sec., R. 2, Mabton.

Div.	*Chairman.*	*Div.*	*Chairman.*
163.	John Emarsen.	165.	G. M. McKay.
164.	Paul Killian.	166.	Wm. Lemay.

Wiley City Fruit Protective Association.

W. C. Hall, Pres., R. 5, North Yakima; P. B. Greenwalt, Sec., R. 5, North Yakima.

Div.	*Chairman.*	*Div.*	*Chairman.*
167.	F. A. Gothberg, R. 5.	170.	B. F. Eshbach, R. 5.
168.	W. C. Hall, R. 5.	171.	J. H. Morrison, R. 5.
169.	P. B. Greenwalt, R. 5.	172.	Mr. Rainey, R. 5.

Selah Heights Fruit Protective Association.

John Oliver, Pres., R. 2, Selah; E. H. Powell, Sec., R. 2, Selah.

Div.	*Chairman.*	*Div.*	*Chairman.*
173.	A. F. Guinan.	178.	S. M. McKee.
174.	O. M. Spencer.	179.	E. V. Taylor.
175.	David Johnson.	180.	Dr. P. W. Cornue.
176.	M. Payette.	181.	J. A. Dickerman.
177.	M. O. Perry		

Riverside Fruit Protective Association.

Ward Austin, Pres., R. 1, Mabton; U. G. Merrill, Sec., R. 1, Mabton.

Div.	*Chairman.*	*Div.*	*Chairman.*
182.	J. T. Baird, R. 1.	184.	Fred R. Jewell, R. 1.
183.	Ed Taylor, R. 1.	185.	C. W. Macomber, R. 1.

Lower Naches Fruit Protective Association.

S. B. Shiley, Pres., R. 6, North Yakima; W. E. Blair, Sec., R. 6, North Yakima.

Div.	*Chairman.*	*Div.*	*Chairman.*
186.	W. R. Rowe, R. 1., Naches City.	190.	F. M. Crabb, R. 6.
187	Albert Dalton, R. 6.	191.	L. H. DeVoir, R. 6.
188.	O. A. Olsen, R. 6.	192.	Frank Dickinson, R. 1.
189.	W. S. Friend (resigned).		

Wapato Fruit Protective Association.

C. Martin, Pres., Wapato; B. Schmidt, Sec., Wapato.

Div.	*Chairman.*	*Div.*	*Chairman.*
193.	Peter Mauch.	197.	John Cook.
194.	A. O. Stingle.	198.	J. B. Baker.
195.	E. D. Knight.	199.	W. E. Watkins.
196.	J. D. Murry.		

Outlook Fruit Protective Association.

W. H. Norman, Pres., R. 1, Outlook; W. C. Sharp, Sec., R. 1, Outlook.

Div.	*Chairman*	*Div.*	*Chairman.*
200.	A. H. Yost, R. 1.	203.	Elmer Thrush, R. 1.
201.	J. W. Armstrong, R. 1.	204.	Mark Leach, R. 1.
202.	U. G. Frantz, R. 1.	205.	J. F. Clapsaddle (resigned).

West Selah Fruit Protective Association.

Pat Tyrrell, Pres., Selah; Everett Stevens, Sec., R. 6, North Yakima.

Div.	*Chairman.*	*Div.*	*Chairman.*
206.	Al Dierker, R. 2, Selah.	208.	Chas. Bounsell, R. 2, Selah.
207.	J. Lute Curtis, R. 6, North Yakima.	209.	W. J. Kiner, Selah.

Byron Fruit Protective Association.

W. H. Walker, Pres., Byron; J. E. Anderson, Sec., Byron.

Div.	*Chairman.*	*Div.*	*Chairman.*
210.	Albert Corkery.	212.	A. Lundquist.
211.	W. H. Walker.	213.	Grant Smith.

Naches Heights Fruit Protective Association.

S. K. Wertman, Pres., Naches City; D. K. Gage, Sec., Naches City.

Div.	*Chairman.*	*Div.*	*Chairman.*
214.	D. Sanders (resigned).	217.	E. E. Yates, North Yakima.
215.	H. Rodenbeck.	218.	W. Bradshaw, North Yakima.
216.	A. R. McAnalley, R. 6, North Yakima.	219.	W. Stewart, North Yakima.
		220.	F. J. Wilcox, North Yakima.

Cowiche Fruit Protective Association.

W. Thompson, Pres., Tieton; W. F. Weimar, Sec., Tieton.

Div.	*Chairman.*	*Div.*	*Chairman.*
221.	C. Brooks, Cowiche.	223.	Willard E. Thompson, Cowiche.
222.	Thos. R. Reese, Cowiche.	224.	Harry Alberts, Tieton.

Tieton Fruit Protective Association.

John D. Griffith, Pres., Tieton; O. F. Kroger, Sec., Tieton.

Div.	*Chairman.*	*Div.*	*Chairman.*
225.	F. H. Gilbert, Tieton.	227.	H. J. Linse, Naches City.
226.	H. W. Smith, Naches City.	228.	Wm. Potter, Naches City.

BETHANY FRUIT PROTECTIVE ASSOCIATION.
C. G. Sprong, Pres., R. 1, Sunnyside; C. O. Hunter, Sec., R. 1, Sunnyside.

The Yakima Valley Fruit Protective associations are organized into a league known as the Yakima Valley Fruit Protective League. The officers are: C. DeVere Fairchilds, President; W. P. Sawyer, Vice-President; F. E. DeSellem, Secretary; C. H. Hinman, Treasurer, and A. S. Congdon, F. F. Morris, S. B. Shiley, and Luke Powell, Trustees.

EXPERIMENTS WITH WARNOCK'S TREE PAINT.

During the spring and early summer of 1914 the Fire or Pear Blight became so prevalent throughout the Yakima Valley that severe tree surgery was found necessary. Early in the season little was thought of the loss of fruit, but as it began to develop many orchardists became anxious to save as much of the crop as possible. Instead of amputation, therefore, some began experimenting with various kinds of "Blight Cures" in the hope of saving the fruit on the affected limbs. Among these cures "Warnock's Tree Paint" became somewhat popular because it seemed to satisfy the present need and in some few cases it undoubtedly was of value in this respect. Its application was usually followed by a drying-up of the canker and a checking of the exudation. In order, however, to prove the real value of this paint in destroying the blight germ (Bacillus amylovorus) it was decided to make a series of tests of treated cankers. The method used is the result of a conference with Prof. W. S. Ballard of the Department of Agriculture, Washington, D. C., Prof. O. M. Morris of the State College at Pullman, Washington, and Mr. T. O. Morrison, Assistant Commissioner, Horticulture, Olympia, Washington.

The first experiment consisted of testing cankers that had been painted. In the orchard selected for this purpose the owner had gone through it once or twice a week for nearly three months and painted all cankers as they appeared so that, when this experiment began, some of the trees had been painted only a few days while others, as long as ninety days. In this orchard specimens from practically every canker within easy reach from the ground were taken. Two samples were taken from each canker, one at the center and the other at the margin. A record of the location of the tree and canker was kept so that the source of each sample could be readily traced. A piece of the bark about an inch square was taken in each case. After each cutting the knife was sterilized with corrosive sublimate and then rinsed off in sterile water. From this orchard 152 cultures were made from 76 cankers. Plate cultures were made of these samples in the following way: Ordinary soup plates were washed, sterilized in a solution of corrosive sublimate and then rinsed in sterile water. About half an inch of sterile water was put in each plate. Bartlett pears were sterilized in the same way as the plates, cut in half and three halves put in each plate with their cut surfaces up. The cut surfaces were always kept entirely free from the water. On two of these surfaces samples were placed, leaving the third as a control or check. The two samples in each plate were taken from the same canker, one from the center and the other from the margin. To prevent other infection the plates were covered with panes of glass that had previously been washed and sterilized.

Of the 152 cultures made, 6 were spoiled, leaving 146, of which 42 developed blight. This shows that a little more than 28 per cent. of the cultures produced blight. The 146 cultures, however, represent 73 cankers (two cultures having been made from each canker). Of these 32 produced blight, 10 of which showing blight in both center and margin of the canker. It appears from this that over 43 per cent. of the cankers produced blight either from the center or margin. When we consider that, at this time of the year (August) a large number of cankers are naturally becoming dormant, it is highly probable that a considerable number of these cankers would have become inactivve without being painted. The actual efficiency of the paint would be that much reduced.

It was also claimed for this paint that it would penetrate into the sap, immunize the tree and kill the organisms in the terminal infections. To ascertain the truth of this claim upwards of 50 twigs showing terminal blight were taken from these painted trees and cultures made of them similar to those made from the cankers. The result of this experiment showed that over 80 per cent. of the twigs contained the living organism.

In order to further test the efficiency of this "tree paint" 24 cankers which had previously been tested to ascertain the presence of living blight germs, were painted with "Warnock's Tree Paint." At the end of one, two and three weeks samples were taken from these cankers and gross cultures made as already described. The following is the result: From cankers painted Aug. 3rd, samples were taken Aug. 10th, 14 cankers out of 24 showing the living blight organisms or 58 1-3 per cent. Samples for the second test were taken Aug. 17th, two weeks after the application of the paint, 10 cankers out of 24 showing the living organism or 41 2-3 per cent. Samples for the third test were taken Aug. 24th, three weeks after the application of the paint, 10 cankers out of 24 showing the living blight organism or 41 2-3 per cent., the same as the preceding.

From these experiments it would appear: First. That the Warnock Tree Paint tends to stop the exudation of the cankers, thus lessening the chances for immediate spread of the disease. In the hands of careful people it might thus be of some benefit in saving the current crop where large limbs are infected. This same thing, however, might be accomplished by tree surgery. Second. It does not kill or inhibit the growth of the blight organism in the terminals. Third. The organism in some of the cankers is killed but, the percentage being so small, it is far from safe to depend upon it as a permanent cure. Fourth. The most dangerous feature about this tree paint is that it has some semblance of virtue. On account of this, we are apt to read

"Tip blight" for which aphis, ants, bark-boring beetles, etc., are chiefly responsible for introducing the pear blight bacteria by piercing or biting the tender tips with infected mouth-parts.

into it other virtues that it does not possess. It is highly desirable to avoid its use except perhaps as a temporary check of cankers on large limbs in order to harvest the crop. It is not safe to depend upon it to kill all the cankers. Persons that have used it should watch the painted cankers for fear they become "hold-over cankers" and a source of infection for the next year. Fifth. As far as we know at present the only safe remedy, other than the amputation of the diseased parts, is the cutting out of the canker and the disinfecting of the wound.

J. W. HOTSON,
Plant Pathologist, University of Washington.

Following is the expenditure of appropriation for salary and expenses field inspectors, during period July 1, 1913, to July 1, 1914:

Counties.	*Expenditures.*
Yakima, Kittitas	$ 4,414.81
Thurston, Mason, Chehalis, Pacific, Lewis, Wahkiakum, Cowlitz	3,248.23
Chelan, Okanogan, Douglas, Grant	3,213.65
Whatcom, Snohomish, Skagit, Island, San Juan	3,146.20
Spokane, Lincoln	2,132.46
Clarke, Skamania, Klickitat	2,053.81
Benton, Franklin, Adams	2,037.39
Pierce	2,004.93
Walla Walla, Garfield, Columbia	1,992.76
Whitman, Asotin	1,841.80
King	1,647.42
Stevens, Ferry, Pend Orielle	1,646.80
Jefferson, Clallam, Kitsap	1,163.57
Total	$30,543.83

COMMERCIAL PRODUCTION OF FRUITS AS SHOWN BY CAR SHIPMENTS DURING 1913.

These figures were compiled from the reports of the district horticultural inspectors and include only fruits actually shipped up to January 1st, 1914.

COUNTY	Apples	Pears	Peaches	Prunes	Apricots	Grapes	Canteloupes	Watermelons	Currants	Cherries	Strawberries	Loganberries	Blackberries	Raspberries	Gooseberries	Mixed fruits
Asotin	5	3	5	....	1	2	....	....	....	4	....	....	....	....	....	......
Benton	37	6½	163	3	2	22	4	12	....	3	38	....	....	....	....	......
Chelan	3,924	160	318	35	125	....	....	....	....	68	....	....	....	....	....	......
Clarke	42	14	....	115	....	3	....	....	3	....	30	....	10	10	....	11
Columbia	60	.....	4	....	....	....	....	....	....	....	....	....	....	....	....	......
Cowlitz	7	1	....	....	....	....	....	....	....	....	....	....	....	....	....	......
Douglas	125	25	90	2	20	....	....	....	....	2	....	....	....	....	....	......
Ferry	21	2	4	3	....	....	....	....	....	2	....	....	....	....	....	......
Garfield	10	10	40	....	....	....	....	....	....	....	....	....	....	....	....	......
Grant	13	.....	5	....	2	....	....	....	....	....	....	....	....	....	....	......
Kittitas	51	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Klickitat	27	2	7	18	4	7	10	6	....	3	45	....	....	....	....	......
Lewis	15	1	....	....	....	....	....	....	....	....	....	....	....	....	....	......
Lincoln	42	8	38	5	1	....	....	....	....	....	....	....	....	....	....	......
Okanogan	45	1	8	....	3	....	....	....	....	....	....	....	....	....	....	......
Pierce	6	1	....	1	....	....	....	....	9	1	85	8	143	370	2	......
Skagit	1	.....	....	....	....	....	....	....	....	....	19	....	....	....	....	1
Skamania	33	1	....	....	....	....	....	....	....	....	4	....	....	....	....	......
Snohomish	1	.....	....	....	....	....	....	....	....	....	25	....	....	....	....	......
Spokane	208	2	....	22	....	....	....	....	....	....	75	....	....	....	....	......
Stevens	30	12	9	11	4	....	....	....	....	5	....	....	....	....	....	......
Thurston	7	2	....	....	....	....	....	....	....	....	....	....	....	....	....	......
Walla Walla	253	4	10	145	4	50	9	16	....	10	2	....	....	....	....	10
Whitman	85	24	75	25	6	2	5	....	....	10	1	....	....	....	....	......
Yakima	1,995	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	*2,494
Totals	7,043	279½	776	385	172	86	28	34	12	108	324	8	153	380	2	2,517

* Soft fruit.

COMMERCIAL PRODUCTION OF VEGETABLES.

As shown by car lot shipments season of 1913.

(Compiled from inspectors' reports, period ending Jan. 1, 1914.)

The commercial production of vegetables shown by the car lot shipments over and above the local consumption by the various counties is shown as follows: Asotin, 10 cars of lettuce and one of tomatoes; Chehalis, 25 cars of potatoes; Clarke, 340 cars of potatoes and 48 cars of onions; Columbia, 10 cars of potatoes; Cowlitz, 20 cars of potatoes, one car of cabbage, one of carrots and two of turnips; Garfield, five cars of potatoes; Kittitas, 90 cars of potatoes and four of onions; Klickitat, 33 cars of potatoes; Lewis, 40 cars of potatoes, four cars of onions, eight cars of cabbage, one car of celery, two cars of carrots and three of turnips; Pierce, 23 cars of cabbage, 10 cars of cauliflower, 11 cars of celery, 29 cars of rhubarb and two of asparagus; Skagit, 35 cars of potatoes; Skamania, 70 cars of potatoes and four of onions; Snohomish, 135 cars of potatoes; Stevens, 13 cars of cabbage, one of mixed vegetables, one of cucumbers and one of tomatoes; Walla Walla, 110 cars of potatoes, 125 cars of onions, 90 cars of cabbage, 21 cars of beets, 43 cars of rhubarb, 22 cars of spinach, and 32 cars of turnips; Wahkiakum, 24 cars of potatoes, three of onions, and 20 of turnips; Whatcom, 48 cars of potatoes, 10 cars of onions, six cars of cabbage and nine of tomatoes; Whitman, 300 cars of potatoes and one car of cabbage and two of tomatoes; the district of Yakima and Benton counties, 700 cars of potatoes and 40 cars of mixed vegetables.

IMPORTATIONS OF FRUIT INTO WASHINGTON.

As shown by the car lot receipts of fruit up to January 1, 1914.

The fruits imported into this state from other states and countries for the year of 1913 show the following distribution by counties: Chehalis imported three cars of apples, 12 cars of oranges, seven cars of lemons, 22 cars of bananas, two cars of grapefruit, six cars of grapes, six of canteloupes, and 13 of watermelons; Columbia, one car of oranges, one of lemons, two of bananas, a half car of grapefruit and one car of mixed fruit; Ferry, the equivalent of one car of mixed fruit; Garfield, a car each of oranges, lemons, bananas, and mixed fruits; King, 25 cars of apples, 325 of oranges, 100 of lemons, 404 of bananas, 17 cars of pears, 56 of peaches, 24 of prunes and plums, four of apricots, five of pineapples, 68 of grapefruit, 154 of grapes, 123 of canteloupes, 122 of watermelons, two of crabapples, nine of cherries, 84 of strawberries, two of raspberries, 18 of cranberries and 20 of Jap oranges; Pierce, two cars of apples, 59 of oranges, six of lemons, 49 of bananas, two of pears, four of peaches, one of prunes, one of apricots, two of grapefruit, four of figs, 42 of canteloupes, 16 of watermelons, 13 cars of mixed fruits, six of cranberries, two of dates, six of Japanese oranges and two of nuts; Spokane, five of apples, 80 of oranges, 45 of lemons, 160 of bananas, 10 of peaches, 40 of watermelons, two of cherries, 25 of strawberries, and four of mixed fruits; Stevens, two of peaches, and one of mixed fruits; Thurston, 20 cars of apples, eight cars of oranges, one car of lemons, two cars of bananas, one of grapefruit, five of canteloupes, eight of watermelons, and two-thirds of a car of cranberries; Walla Walla, seven cars of oranges, four of lemons and 12 of bananas, three of grapefruit and three of mixed fruit; Whatcom, seven cars of apples and 20 cars of oranges, nine of lemons, three of pears, five of peaches.

IMPORTATIONS OF VEGETABLES INTO WASHINGTON.

As shown by car lot receipts of vegetables up to January 1, 1914.

The importations of vegetables from outside of the state were distributed over the following counties as follows: Chehalis, 38 cars of potatoes, nine of onions and 11 of cabbage; Columbia, three cars of potatoes and one each of cabbage, sweet potatoes and mixed vegetables; Ferry, a car each of potatoes and mixed vegetables; Garfield, one each of potatoes and mixed vegetables; King, 204 cars of potatoes, 264 cars of onions, 128 of cabbage, 120 of lettuce, 14 of cauliflower, 50 of celery, 96 of sweet potatoes, 64 of mixed vegetables, eight of rhubarb, 11 of peppers, one of garlic, four of cucumbers, one of spinach, seven of turnips, one of rutabaga, five of egg plant, three of squash, 35 asparagus, five of beans, nine of peas, one-half car of corn, four cars of parsnips, four of brussel sprouts, and 110 cars of tomatoes; Kittitas, one car of mixed vegetables; Pend Oreille, one car of mixed vegetables; Pierce, 14 cars of potatoes, 25 of onions, three of cabbage, six of lettuce, three of cauliflower, four of celery, 25 of sweet potatoes, 10 of peppers, one of cucumbers, seven of egg plant and 12 of tomatoes; Stevens, one car of mixed vegetables; Spokane, 14 cars of potatoes, 17 of onions, nine of cabbage, five of lettuce, three of cauliflower, four of celery, 48 of sweet potatoes, 21 of mixed vegetables, six of rhubarb, four of peppers, three of cucumbers, nine of turnips, and 12 of asparagus; Thurston, 4½ cars of onions, and one car of sweet potatoes; Walla Walla, 10 cars of potatoes, eight of cabbage, four of sweet potatoes, and two of mixed vegetables; Whatcom, nine cars of potatoes, 34 cars of onions, four cars of cabbage, and two of tomatoes.

INTER-COUNTY SHIPMENTS OF WASHINGTON GROWN FRUITS.

As shown by car lot receipts up to January 1, 1914.

Fruits produced in one county and shipped to another for consumption, are shown in the following distribution of car lot receipts: Chehalis county imported 47 cars of apples, 21 of pears, 55 of peaches, one of prunes and one of grapes, and 13 of miscellaneous berries; Ferry, one car of miscellaneous berries; King, 754 cars of apples, 50 of pears, 308 of peaches, 27 cars of plums and prunes, 25 cars of apricots, 45 cars of grapes, 88 cars of canteloupes, 25 cars of watermelons, six cars of crabapples, three cars of currants, 34 cars of cherries, 192 cars of strawberries, four cars of loganberries, 32 cars of blackberries, 42 cars of raspberries, four cars of gooseberries, three cars of huckleberies, 17 of miscellaneous berries, one car of quinces and one of cranberries; Pend Oreille, a car each of pears, peaches and prunes and the equivalent of a half car of miscellaneous berries; Pierce imported 231 cars of apples, 36 of pears, 174 of peaches, six of prunes, three of apricots, 30 of canteloupe, 23 of watermelons, three of crabapples, one of cherries, three of huckleberries, two of quinces, five of cranberries and 26 of mixed fruits; Spokane, 66 cars of apples, six of pears, 40 of peaches, one of prunes, ten of grapes, one of cherries, seven of strawberries, 15 of raspberries, 31 cars of miscellaneous berries, and 64 cars of mixed fruits; Stevens, one car of miscellaneous berries; Thurston, nine cars of apples and 64 cars of peaches, three cars of miscellaneous berries and one car of cranberries; Wahkiakum, seven cars of apples; Whatcom, 20 cars of apples, four of pears and 72 cars of peaches.

INTER-COUNTY SHIPMENTS OF WASHINGTON GROWN VEGETABLES.

As shown by the car lot receipts up to January 1, 1914.

An additional disposition of the vegetables produced in the various counties is shown in the imports of vegetables from one county to another in the following car-lot shipments: Chehalis imported from other counties of the state 46 cars of potatoes, three cars of onions and two cars of carrots. King imported from other counties, 1,712 cars of potatoes, 163 cars of onions, 87 cars of cabbage, 50 cars of lettuce, four of cauliflower, six of celery, 24 of carrots, five of beets, 25 of rhubarb, three of peppers, 28 of cucumbers, seven of spinach, 12 of turnips, three of rutabagas, four of egg plant, three of squash, 16 of asparagus, one of beets, six of peas, six of corn, two of parsnip and 60 cars of tomatoes. Pierce imported 101 cars of potatoes, 12 cars of onions, 94 cars of cabbage, 3½ cars of cucumbers, two cars of turnips, one of rutabagas, two cars of egg plant, one of squash, six of corn and 16 cars of tomatoes. Thurston, 23 cars of potatoes, four of onions and one of cabbage.

APPROXIMATE VALUATION OF COMMERCIAL FRUIT SHIPMENTS FOR SEASON 1913, COMPUTED IN TERMS OF STANDARD PACKAGES.

Apples	4,437,090 boxes	@ $1 00	$4,437,090
Pears	204,650 boxes	@ 1 10	225,115
Peaches	776,000 boxes	@ 30	232,800
Prunes	385,000 boxes	@ 50	192,500
Apricots	110,400 boxes	@ 70	77,280
Grapes	129,000 baskets	@ 25	32,250
Cantaloupes	14,000 crates	@ 90	12,600
Watermelons	850 tons	@ 15 00	12,750
Currants	7,200 crates	@ 1 00	7,200
Cherries	1,620,000 lbs.	@ 06	97,200
Strawberries	194,400 crates	@ 1 30	252,720
Loganberries	4,800 crates	@ 1 30	6,240
Blackberries	91,800 crates	@ 1 30	119,340
Raspberries	228,000 crates	@ 1 30	296,400
Gooseberries	1,200 crates	@ 1 30	1,560
Mixed fruit	2,517 cars	@560 00	1,409,520
Total			$7,412,565
Dried prunes (Thurston, Whatcom, Clarke, Whitman, Walla Walla counties)	5,187,550 lbs.	@ $0 07	$363,128
Dried apricots (Klickitat county)	22,000 lbs.	@ 10	2,200
Dried apples (Chelan county)	18,200 lbs.	@ 07	1,274
Total—Dried fruits			$366,602
Total—Dried and fresh fruits			$7,779,167

The above figures are for production of fresh and dried fruits. Figures showing canned fruits and vegetables are included elsewhere in this report.

CANNERIES AND BY-PRODUCT FACTORIES WITHIN THE STATE.

(Taken from reports of the horticultural inspectors) Season 1913.

The output of the Clarkston Fruit and Canning Co. for the season 1913 according to the report was 15,000 cases. The products used were apricots, cherries, peaches, pears, plums, squash and tomatoes.

One grape juice factory was reported for Benton county. The amount of products used were: grapes, 120 tons; apples, 14 tons.

Chelan county canneries and by-products factories reported are: The Wenatchee Canning Co., with output of 24,528 quarts and 6,903 gallons of cherries; 19,676 quarts apricots; 404,481 quarts and 102,703 gallons peaches; 15,568 gallons apples. Apples evaporated 18,250 pounds. The Harley Farwell Cider & Vinegar plant of Wenatchee used 6,000 bushels of apples; vinegar output, 12,000 gallons. Rice & Brooks Co., of Cashmere, manufactured cider and vinegar commercially. Clarke county converts practically its entire production of prunes into dried product which amounted to 4,600,000 pounds for the season 1913. There are 257 prune driers in Clarke county and three packing houses. The Co-Operative Cannery Co., of La Center, processed 600 cases of fruits during the season 1913. A new cannery has been put in operation at Vancouver and will apparently be the largest cannery in Clarke county.

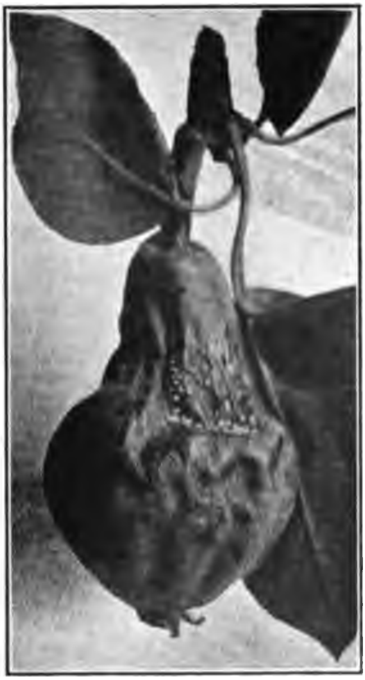
In King county there are located the Seattle Puget Sound Packing Co. which used 750 tons of cabbage, 500 tons cucumbers, and 10,000 crates of berries; The Pacific Coast Syrup Co., which used 63,726 pounds strawberries; 13,624 pounds currants, 20,438 pounds cherries, 206,314 pounds raspberries, 113,186 pounds blackberries, 16,061 loganberries, 49,137 pounds prunes, and 123,140 pounds apples. The J. P. Marshall & Co. used 13 cars apples and 520 barrels was the output of cider and vinegar; Wm. Hunt & Co. used 90 tons cabbage, 200 tons cucumbers and 20 tons of apples; and the Vashon Island Fruit Co. used 20,000 crates of strawberries.

Pierce county leads all counties of the state in amount of its canned products. During the season 1913 the two canneries located at Puyallup and Sumner have as combined output 196,508 pounds rhubarb; 692,514 pounds strawberries; 1,297,402 pounds raspberries; 47,086 pounds loganberries; 5,007 pounds currants; 6,018 pounds cherries; 1,870,126 pounds blackberries; 21,170 pounds plums; 54,588 pounds pears; 149,589 pounds apples; 27,212 pounds cabbage; and 24,964 pounds squash.

Combined barreled output was raspberries 112,500 pounds and strawberries 37,500 pounds. The Northern Pickle Company's plant which is also in Pierce county, produced 27,150 gallons of cider during season 1913.

Snohomish and Skagit counties have small canneries at Langley, Bermingham and Snohomish. Small canneries at Anacortes, Mt.

North Yakima business men in an orchard studying pear blight. These men thoroughly realize what the fruit industry means to the state and the necessity for controlling blight.



Bartlett pear badly infected with blight. The white beads of exudate contain millions of the disease germs.

Vernon, Sedro Woolley and Stanwood have, it appears, been rather unsuccessful and are reported closed.

Spokane county has according to the inspector's report two cider and vinegar factories. The Keller-Lorens Co., of Spokane, used 2,000 tons of apples, and the Evergreen Fruit Products Co. of Kiesling used 1,275 tons of apples, the principal product being bottled cider. There are two small canneries in the Spokane valley but these were not operated during the season 1913.

Thurston county is fortunate in having a well equipped cannery in the National Canning Co., of Olympia. During the season 1913 this cannery used 12,000 crates of logan berries; 5,000 crates blackberries; 14,000 crates raspberries; 8,000 crates strawberries; 80 tons green beans; 50 tons rhubarb; 85 tons plums; 50 tons pears; 15 tons cherries and 350 tons apples. These products were grown in Thurston county except five cars of apples and one car of pears. Thurston county has one small prune drier with an output of 15 tons dried prunes for 1913.

In Whatcom county there are six small fruit canneries, four of which operate most of the season, one operates a part of the season and one is closed. The combined output for 1913 was 4,975 cases canned apples; 2,050 cases canned cherries; 5,865 cases pears; 8,020 cases plums; 690 cases blackberries; 4,750 cases raspberries; 1,543 cases strawberries, 200 cases beans and 130 cases rhubarb. Whatcom county also produced 7,550 pounds dried prunes.

The Inspector's report shows that in Whitman county the Pullman Vinegar Co., of Pullman, used 450 tons of apples and produced 50,000 gallons of vinegar. The Allen Fruit Co. of Elberton used 800 tons of prunes and produced 250 tons of the dried product.

Walla Walla county has one by-product factory which uses large quantities of cucumbers, cabbage, cauliflower, onions and fruits for pickling, etc.

The output of dried prunes for Walla Walla county, season 1913, was two cars, approximating 50,000 pounds.

For the season 1913 the Keene Processing Co., of North Yakima, used 400 tons of apples, making 400 barrels vinegar. The Yakima Fruit Products Co., also of North Yakima, had for the season's output 1800 barrels vinegar and 600 barrels sweet cider. This plant used approximately 1,000 tons of apples.

ORCHARD ACREAGE.

The report of the Commissioner of Horticulture for January 1, 1913, places an estimate for the entire state of 266,857 acres for the fruit acreage for that date. According to the report the estimated acreage devoted to the different kinds of tree fruits is as follows:

Apples 217,840 acres, pears 13,279 acres, peaches 17,072 acres, plums and prunes 10,927 acres, cherries 6,104 acres, apricots, nectarines and quinces 1,635 acres. In addition to this there is the small fruit acreage including strawberries, raspberries, blackberries, loganberries, dewberries, gooseberries and currants estimated at 8,200 acres, vineyards in bearing 300 acres, and cranberries in bearing 200 acres, making a grand total of 275,557 acres devoted to fruit culture in Washington.

BEARING FRUIT TREES.

Taken from estimates on file January 1, 1912.

COUNTIES	Apples	Pears	Peaches	Apricots	Plums and prunes	Cherries
Adams	2,091	1,289	581	168	229	581
Asotin	38,272	1,750	129,742	2,279	3,498	39,200
Benton	120,423	32,980	114,149	3,522	4,183	12,291
Chehalis	29,260	2,775	700	....	2,970	2,550
Chelan	1,243,193	42,774	122,969	20,172	10,670	30,134
Clallam	32,100	1,100	50	....	700	209
Clarke	123,638	18,097	4,762	177	511,721	12,761
Columbia	81,496	5,784	12,882	....	5,880	5,192
Cowlitz	86,983	7,737	492	....	13,445	8,385
Douglas	14,862	4,902	5,056	1,046	1,041	2,106
Ferry	14,267	712	1,321	369	1,221	1,398
Franklin	4,310	1,006	2,586	142	240	546
Garfield	23,865	4,164	26,451	....	7,406	4,445
Grant	15,500	800	8,500	500	400	200
Island	44,800	4,800	600	....	3,900	7,200
Jefferson	19,800	800	40	....	5,700	600
King	98,000	20,000	1,000	600	30,000	25,000
Kitsap	151,681	24,900	3,928	....	23,737	19,167
Kittitas	30,900	2,400	500	....	1,800	1,700
Klickitat	97,300	3,100	23,000	500	4,600	3,000
Lewis	84,111	12,258	576	....	40,706	14,567
Lincoln	58,684	9,344	19,597	883	5,868	3,419
Mason	12,900	2,595	475	....	2,420	2,400
Okanogan	158,667	3,675	6,753	1,450	5,285	2,800
Pacific	8,063	1,064	50	....	2,634	1,144
Pend Oreille	6,108	250	865	40	711	214
Pierce	98,000	20,000	1,000	600	30,000	25,000
San Juan	48,466	2,449	19	34	6,829	1,461
Skagit	54,077	7,419	2,281	....	6,583	7,547
Skamania	29,800	2,300	4,900	60	7,200	1,800
Snohomish	60,964	7,912	1,389	....	5,467	8,416
Spokane	595,076	27,333	32,500	....	48,373	46,304
Stevens	126,624	8,337	11,524	1,231	11,738	6,582
Thurston	68,386	2,565	550	....	34,155	8,640
Wahkiakum	3,480	277	....	....	1,729	202
Walla Walla	95,848	8,096	7,318	....	27,231	3,630
Whatcom	29,620	2,306	498	35	5,656	5,423
Whitman	106,750	1,145	68,750	2,880	26,550	5,965
Yakima	642,032	247,222	461,729	6,087	18,383	16,644
Totals	4,510,386	571,910	1,079,578	42,775	920,843	335,199

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FRUIT TREES THREE YEARS AND UNDER.

Taken from estimates on file January 1, 1912.

COUNTIES	Apples	Pears	Peaches	Apricots	Plums and prunes	Cherries
Adams	11,646	3,474	1,991	200	350	1,055
Asotin	85,874	12,600	47,783	343	12,751	1,229
Benton	267,441	76,318	71,583	5,968	10,586	11,991
Chehalis	3,115	680	266	....	725	925
Chelan	578,388	50,622	52,022	20,569	4,951	14,188
Clallam	4,100	1,000	200	....	900	1,500
Clarke	39,132	5,780	7,331	238	26,472	5,009
Columbia	21,000	3,000	2,000	....	800	500
Cowlitz	6,006	1,441	1,115	....	557	1,292
Douglas	222,339	14,771	28,242	6,487	2,519	6,458
Ferry	23,739	756	2,681	210	876	1,429
Franklin	37,405	17,778	10,404	728	941	2,204
Garfield	6,000	2,000	1,500	....	500	200
Grant	110,700	29,100	29,200	4,700	6,400	7,900
Island	18,200	2,800	300	....	2,100	4,900
Jefferson	2,700	500	100	....	400	700
King	50,000	20,000	1,500	800	15,000	30,000
Kitsap	15,368	2,470	1,155	....	2,314	4,846
Kittitas	144,800	16,300	2,300	....	700	600
Klickitat	298,500	10,700	33,600	30,900	1,800	12,000
Lewis	8,994	10,605	741	....	1,968	3,076
Lincoln	22,644	7,653	20,239	499	495	1,797
Mason	2,266	555	300	....	440	635
Okanogan	689,868	12,480	38,300	10,413	6,498	11,457
Pacific	1,589	417	34	....	407	422
Pend Oreille	4,545	746	992	58	1,425	351
Pierce	50,000	20,000	1,500	800	15,000	30,000
San Juan	9,118	5,610	511	94	1,185	2,402
Skagit	24,508	4,610	1,951	....	....	....
Skamania	42,900	5,900	3,700	100	6,730	6,316
Snohomish	32,726	5,663	1,392	....	300	1,100
Spokane	1,299,805	6,902	6,704	....	6,925	8,246
Stevens	199,052	15,852	14,330	1,856	942	9,834
Thurston	4,250	3,375	320	....	2,880	9,618
Wahkiakum	354	63	26	....	1,800	1,535
Walla Walla	106,278	....	....	....	45	44
Whatcom	7,945	3,685	1,557	89	1,824	3,210
Whitman	19,544	7,313	25,138	3,715	4,235	4,720
Yakima	1,941,739	310,506	226,065	16,632	27,262	13,989
Totals	5,107,566	69[illegible],925 3 693,925	610,723	115,339	171,194	187,516

From P. S. Darlington's report, December, 1913.

CHELAN COUNTY.

	Apples	Peaches	Pears	Plums	Apricots	Cherries
Bearing	731,381	142,708	40,799	9,826	26,212	27,556
Three years old	261,475	2,991	7,419	80	1,061	1,239
Two years old	258,494	2,284	5,728	1,078	2,192	431
One year old	212,097	908	8,481	15	1,558	120

DOUGLAS COUNTY.

	Apples	Peaches	Pears	Plums	Apricots	Cherries
Bearing	75,623	50,815	5,013	1,474	9,897	2,163
Three years old.....	88,834	2,109	2,614	68	1,826	1,021
Two years old........	158,720	15,960	8,999	75	1,212	832
One year old.........	94,018	7,612	1,550	2	490	42

OKANOGAN COUNTY.

	Apples	Peaches	Pears	Plums	Apricots	Cherries
Bearing	79,658	10,841	8,395	2,589	895	2,812
Three years old......	98,925	10,717	2,895	850	2,620	1,386
Two years old.......	219,178	14,405	9,519	856	5,431	8,046
One year old.........	264,950	8,987	2,918	507	2,876	1,380

RECOMMENDATIONS.

The Horticultural laws are being revised and drafted by a lawyer who is himself a fruit grower and experienced in drawing up charters, bills, etc. A number of written suggestions for the improvement of the horticultural laws were submitted by this Department and the bill as drawn covers, we believe, the important and necessary items. The bill as drafted will be passed upon by the various fruitgrowers' associations in the State and the horticultural legislation as desired by the fruit growers, we believe, is incorporated therein. This Department very earnestly recommends the new bill for the careful attention of the legislators.

There is no industry that requires more skill and alertness than does that of growing fruits for the commercial trade. The commercial orchardist is the man who has thousands of dollars invested, and to meet competition squarely and profitably strives to produce as nearly as possible one hundred per cent. extra fancy fruit. The fruit and fruit products of this state are sold to outside states and foreign countries, bringing back to Washington each year several million dollars revenue.

If pests and diseases are allowed to reduce fruit lands to hay lands the owners will be heavy losers in realty value and the state in reduction of assessed valuation. The fruit production of Washington is increasing rapidly not so much on account of orchard planting as on account of increasing age of bearing trees.

It is the history of all districts that as orchards become more plentiful and grow older that the importance of and number of pests to control becomes more necessary. From year to year then the duties of the horticultural division will gradually be increased by the additional demands that will be made upon it. A workable horticultural law will be necessary to make the given appropriation most valuable through the educational work and police duties of this division.

The re-written horticultural laws are recommended for the serious consideration of the legislature, and their enactment into law will be most valuable to fruit growers of Washington.

Respectfully submitted,
T. O. MORRISON,
Asst. Com'r in charge of Horticultural Division.

ST

Vegetable Calendar for

VEGETABLES	Commercial Varieties Adapted to Puyallup Valley	If Planted at This Date	Transplant If Nec
POTATOES	Early Rose (red variety)	March 1st	
	*Beauty of Hebron (red variety)	March 1st	
	Maggie Murphy (red variety)	April 1st	
	*American Wonder	April 1st	
	Gold Coin	April 1st	
	Wilson's Choice	April 1st	
	*White Elephant	April 1st	
	Netted Gem	April 1st	
ONIONS	White Globe	February 15th to March 1st	
	Globe Danvers	February 15th to March 1st	
	Australian Brown	February 15th to March 1st	
	Red Wethersfield	February 15th to March 1st	
	Yellow Globe	February 15th to March 1st	
CABBAGE	Early Wakefield	Seed in the open, Oct. 15th	December 1st to 15t
	Early Summer	Seed in cold frames, Feb. 15	April 1st to 15th
	Danish Baldhead	Drill in seed bed, April 1st	June 1st to 10th
CAULIFLOWER	Early Snowball	Seed in cold frames, Feb. 15	April 1st
	Autumn Giant	Drill in rows, April 1st	June 1st to 10th
CELERY	White Plume	Seed in cold frames, Feb. 15	Transplant as soon are 2 inches high.
STRING BEANS	Golden Waw (bush bean)	May 1st	
	Stringless Green Pod (bush bean)	May 1st	
	Kentucky Wonder (pole bean)	May 1st	
PEAS (Green Peas)	Early Alaska	December 1st to 15th	
	Prosperity	March 1st	
	Telephone	March 15th	
TABLE BEETS	Early Egyptian	April 1st	
	Eclipse	May 20th to June 1st	
RHUBARB	Lorenzo (in the open)	March 1st to April 1st	Eyes even with top o
	Lorenzo (under cover)	January 1st	Transplant whole pl and put under mu board cover.
	Victoria	March 1st to April 1st	Eyes even with top o
SQUASH	Hubbard (running variety)	May 1st	Plant 6 to 10 seeds
	Boston Marrow (running variety)	May 1st	Plant 6 to 10 seeds
RADISHES	Early Scarlet Button	April 1st	
	French Breakfast	April 1st	
	Chartier	April 15th	

Other varieties, and vegetables, which do not appear on this chart, were not mentioned that they are field rather than garden crops. Farmers who are not especia

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DIVISION OF FOODS, FEEDS, FERTILIZERS, DRUGS, OILS AND BAKERY INSPECTION

Honorable H. T. Graves, Acting Commissioner of Agriculture, Olympia, Wash.

DEAR SIR: In compliance with law I am submitting herewith the first report of the Fourth Division of the State Department of Agriculture, the work of this Division embracing Foods, Feeds, Fertilizers, Drugs, Oils and Bakery Inspection.

In the administration of this Division, I have sought to keep constantly in view the policy of the State Administration, namely, to accomplish as much work as possible with the least possible expense. The work of the Division as a whole, when compared with similar departments in other states, on the basis of number of inspections, territory covered, results obtained, and number of people employed, should rank among the best. This showing could not have been made were it not for the loyal, earnest, and efficient efforts of those associated with me in the work.

During the year there were employed in food and bakery inspection work but two inspectors in addition to myself, and but one drug inspector. Their duties carried them to practically every town and city of any size in the state reasonably accessible, and covered the inspection of products at the factory, in wholesale and retail stores.

Inspection was given to restaurants, bakeries, fish stalls, butter stores, stalls in public markets, cold storage plants, wharves, warehouses, canneries, slaughter houses, grocery stores, commission houses, factories, and practically all places where food and drug products are offered for sale or stored. The total number of food and drug inspections made during the year was 5,500, subdivided as follows: Groceries, 2,011; fish stalls, 103; meat markets, 810; slaughter houses, 41; commission houses, 26; cold storage plants, 19; pickle factories, 10; butter stores, 17; restaurants, 46; bakeries, 283; drug stores, 796; and miscellaneous stores and places, 1,338. A report of these various inspections is on file in the Department. In the course of the foregoing inspections 375,312 packages of foods and drugs were found to violate the law and to be unfit for use, and were condemned and destroyed.

Notwithstanding the fact that we have been seriously handicapped through lack of a proper statute, we have invariably given close attention to and sought to promote sanitation and cleanliness in all places inspected. The food and drug inspectors are instructed to carefully examine all foods and drugs to determine whether they are adulterated, misbranded, stale or, from any other cause, unfit for use.

The amount of work involved in the careful inspection of the average grocery or drug stock is considerable and unless done with expert knowledge and care amounts to little. To make this part of our work serviceable and of real value to the trade and consuming public has been the aim and ambition of this Division.

While our force of food and drug inspectors has been inadequate, the inspectors have in the main, proved themselves unusually diligent and expert. They have been in most instances capable of determining by their own examination of the product whether it complied with the requirements of the law. Therefore but a relatively small percentage of the 375,312 packages of foods and drugs condemned and confiscated were sent to the State chemists for analysis.

In addition to our regular inspection work, we have conducted an educational exhibit and campaign covering a period of twelve weeks at various fairs and pure food exhibits throughout the State. This feature of our activities has had quite as wholesome and beneficial an effect in banishing the practices of marketing adulterated, misbranded, stale, and unwholesome products, as have the penalties and prosecutions brought under the pure food law.

In addition to the above educational work, the undersigned has addressed a large representative meeting of wholesalers and manufacturers at Seattle, numerous retail grocers' meetings in large centers, state convention of bakers, and a number of gatherings of women's clubs in various parts of the State. These addresses were designed to make the work of this Division of the most immediate service to the dealers and consumers in the State and to procure the widest possible public co-operation in the work.

Early in the exercise of our duties we discovered that a very large amount of stale and unwholesome food was being marketed and kept in stock by dealers throughout the State. Especially was this true of canned meats and fish. The condemnation, confiscation and vigorous prosecution of the guilty parties, together with the educational campaign we have conducted and the merited denunciation and unenviable advertising given by the press to the guilty parties have accomplished wonders, and it is safe to say that at no time in the history of the State have our food supplies been in a better and more wholesome condition. Notwithstanding the improvements accomplished, we are far from having reached such a satisfactory condition as to justify any relaxation in either our efforts at inspection or legislation to improve food supply conditions.

Twenty-nine prosecutions for violation of the law were instituted by this Division during the year. They resulted in sixteen convictions, four forfeitures of bail, four dismissals and two acquittals, and three cases are still pending. Seventeen cases were begun under the food and feed laws and twelve under the Pure Drug act. The aggregate fines and forfeitures were $1,675.00, subdivided as follows: Foods, $1,450; Drugs, $225.

It is the policy of the Division to use the utmost caution in the institution of prosecutions. It is also our policy, when prosecutions are begun and we are satisfied the offense has been wilful and deliberate, to vigorously prosecute violators and when conviction is secured, to insist on the maximum penalty. The Division believes that no law is important except as it is enforced.

During the year especial attention has been given to certain food products, particularly to canned meat put up under the various regulations issued by the Federal government under the two General Food Acts of 1891 and 1906. Of the canned meats condemned and confiscated, the majority were found to be bad because of deterioration from age. The unwholesomeness of the older goods was often demonstrated by opening cans in the presence of their owners—grocery proprietors—who upon noting the bad odor, corrosion, and general unfitness of the product, generally consented to sign a waiver for their condemnation and destruction. In many instances cans that bore no external evidence to condemn them were submitted to the State Chemist for chemical and bacteriological analysis and proved to be dangerous by both tests. Harmful bacteria were found in numerous instances. No prosecutions against wholesalers or retailers would be justifiable in instances of this kind, for the reason that they labored under the false belief industriously spread by manufacturers that where a can shows no external evidence of deterioration as from leaks or swells the contents are right.

Our experience in numerous well-founded tests, as above described, has proved the absolute fallacy of manufacturers' contentions that canned products hermetically sealed and properly sterilized will keep indefinitely. There is no food product that does not deteriorate with age. In all our educational work we have sought to impress this fact upon everyone in any way interested in our activities.

VINEGAR.

The State has no law regulating the manufacture and sale of vinegar except what control is given under the pure food law. This law provides for no standard except absolute purity. A strict enforcement of the pure food law as relates to this special product would not only work a great hardship on the vinegar manufacturers of the State but in many instances would result in injury to the consumers. One of the early proceedings of this Division was to gather numerous samples of vinegar from the various parts of the State for analysis. The reports of our chemists on the samples were startling, and disclosed that at least 75 per cent of the vinegars on the market were illegal under both State and Federal ruling. This was certainly a very deplorable showing and called for heroic treatment. Our chemists were called together with members of the Department at North Yakima to consider the problem, and if possible to suggest a remedy. On comparing notes we found that all kinds of adulteration was resorted to in order to turn out anything bearing a semblance to vinegar. After thoroughly considering the matter we decided that vinegar should be vinegar, and must comply with the pure food law.

When the rule demanding this was issued, a violent protest was raised by manufacturers and dealers, and in view of the protest, the Division considered that a fair consideration of the interests of the trade required that a modification be issued to become effective April 1st, 1914. This was done in accordance with the policy of the Federal government, which has always given a reasonable length of time in which to dispose of products manufactured and on hand when either a change of law or change of ruling pertaining to food has been made. We are now engaged again in taking samples of vinegar and we propose to prosecute any wilful violations of the standard as established by the regulations above referred to. Dealers have had a reasonable time in which to clean up their stocks.

CONCENTRATED STOCK FEED.

The legislature of 1909 enacted what is known as the Concentrated Commercial Feeding Stuffs Law and delegated its enforcement to the Director of the Washington State Agricultural Experiment Station. When that officer attempted to enforce it his right was challenged in a suit in the Superior Court for King County. The court held that the Director of the Experiment Station was not a statutory officer and therefore could not enforce the law. It remained a dead letter until the legislature of 1913, which in creating the Department of Agriculture transferred the Act to this Division for enforcement. As soon as we gave notice that we were going to enforce the Act practically the same interests who backed the first contest originated a new one, claiming the fees for stamps would be such a burden that they were prohibitive. This contest they won in the King County Superior Court, but the State has appealed to the Supreme Court, where the case is now pending. Other states have similar laws and they are being enforced. There is no good reason, when laws of that nature are necessary, why the interests directly affected should not pay the costs of enforcement.

FERTILIZERS.

The Commercial Fertilizer Statute was enacted in 1899 and was enforced by the officials of the Washington State Agricultural Experiment Station at Pullman until last Spring. The Act transferring its enforcement to this Department and Division made no definite provision for any expense in connection therewith. In the past the fees accruing in connection with its enforcement were collected by the Experiment Station, which was authorized to pay the expenses of collection, analysis, printing, etc. No provision having been made in the transfer for any of these expenses, it has not been clear whether the Department of Agriculture had any right to contract such expense. We have assumed, however, that since the duty of doing this work was imposed upon this Division, we were authorized to incur the necessary expenses, and we have, therefore, proceeded with the work, gathering samples, making the analysis, and enforcing the law. An account of the samples gathered and fees collected will be found in the statistical report under its proper head.

OILS.

The report of the Chief Oil Inspector will be found among the statistical reports, with his comments. The report shows a gratifying increase in consumption and receipts, and demonstrates that the inspectors have been diligent in protecting the State's interests.

BAKERIES.

During the year 283 bakeries have been thoroughly inspected, These inspections have covered condition and quality of materials used, cleanliness and health of employees, and sanitary condition of all utensils, ceilings, walls, floors, sinks, storerooms and toilets. No certificates were recommended or issued unless conditions at the time justified them. Where changes were needed they were ordered and in most instances these orders were promptly complied with.

IN THE INTEREST OF EFFICIENCY AND ECONOMY.

In justice to the Department, it is right to state that all the work done in connection with bakeries, fertilizers, and the concentrated feed act, as well as all work done in connection with the sanitary inspection of slaughter houses and other places, has been performed without a dollar of appropriation to meet the expenses incident to those special services.

NEEDED LEGISLATION.

In calling attention to needed legislation I will not attempt to give a detailed outline of the legislative measures or an elaborate explanation of their need. I will briefly name the measures and make a short statement of what appears to me to be the principal necessity for their enactment.

AMENDMENTS TO FOOD AND DRUG ACT.

The weights and measures clause of the food law should be amended to conform to the Federal act. The drug section of the same law should be amended to conform with Federal requirements so as to prevent misrepresentation of the therapeutic and curative qualities of all drugs. These amendments should not, and I believe will not, meet with any serious opposition.

SLAUGHTER HOUSES.

There is serious need of a law giving the State Department of Agriculture supervision over slaughter houses in this State. This measure should contain strict sanitary regulations and be enforced under a license system that would produce sufficient revenue to carry the expense of its enforcement. If the legislators will visit the slaughter houses in their respective communities and see the conditions under which a large part of the meat consumed in this State is slaughtered and prepared for consumption, this measure will receive their immediate endorsement. Present conditions in many of the slaughter houses in the small communities are vile and unsanitary beyond description, and the law should provide some means of compelling a decent regard by butchers for the health of the consuming public.

COLD STORAGE.

There is great need of legislative regulation of cold storage. The question of proper cold storage control is absorbing the attention of the people today as never before. Cold storage is an economic necessity. It is not the use, but the abuse of cold storage that legislation should seek to correct. There is a limitation to the life and wholesomeness of cold storage food. Speculation in food supplies is being permitted in many instances to overwork the economic value of cold storage. This measure should carry a license of sufficient size to provide for its enforcement.

GENERAL SANITATION.

One of the most imperative needs is a State Sanitary Law. Cleanliness is the foundation principle for the safeguarding of life and health. The battle for pure food has made gigantic progress in the past twenty-five years, but its team-mate, cleanliness, has been sadly neglected. A great many of our foods that are chemically pure are sanitarily unfit to eat. In brief, the best and purest products may become and often do become so contaminated by filthy surroundings and handling that they are often more dangerous than the vilest adulterations that prospered in the balmy days prior to food legislation. The enforcement of a sanitary law can be conducted by the food and drug inspectors without any perceptible increase in expense.

In the matter of needed legislation I have sought to recommend only such matters as my experience has taught me to believe necessary, and that combines two essentials, namely: the greatest good to the greatest number, and the least possible expense in their enforcement. I earnestly urge their consideration and adoption. I have now in course of preparation bills covering every one of them.

In general, I would say that the Food and Drug Act under which we are operating was passed in 1907 and is as good and serviceable as that of any State in the union, and with the suggested amendments will be in absolute harmony with the Federal Act of which it was a duplicate at the time of its adoption.

ADDITIONAL INSPECTORS.

I recommend that an additional food inspector be added to the force. The present force cannot adequately cover the State. We have only one food inspector, as provided for twelve years ago, and the population and number of food establishments has tremendously increased in that time. By using deputies in other branches of the work to assist in food inspection and by devoting considerable of the time of the head of the Division to food inspection, we have managed to cover much of the necessary ground, but adequate service to the State demands an additional food inspector.

If the Supreme Court sustains the constitutionality and reasonableness of the Concentrated Feed Act, there should be an additional inspector to assist in its enforcement. The expense of this additional inspector would be more than met by the fees collected.

COMPENSATION FOR CHEMISTS.

The law constitutes the chemist of the State Agricultural College and chemist of the School of Pharmacy of the State University as State Chemists. These experts receive no extra compensation for such services. The work frequently requires their attention on Saturdays and during vacation periods, as well as when they render service as expert witnesses. It would seem that in justice to them, the State Chemists should receive some compensation for their state food analytical duties. As both institutions are supported by State funds, the compensation could be readily fixed by the legislature and specially provided to be paid out of the funds regularly appropriated for the support of those schools. The analytical work for this State is now being done at a much more moderate cost than in most states.

BRIEF STATISTICAL REPORTS.

Only brief statistical reports of the various acts enforced under this division will accompany this report. The detailed inspection reports are on file in the Department and can be consulted by the public at any time.

Respectfully submitted,

J. J. Higgins,

Asst. Com'r in Charge of the Fourth Division.

FOODS.

Condemned and Confiscated Articles.

		Total.
Asparagus		88
Cereals and Breakfast Foods		209
Baking Powders		196
Chili Sauce and Catsup		50
Chicken Tamale—		
Morris Brand	276	
Helmet Brand	33	
Miscellaneous Brands	45	
		354
Crab Meat—		
Tokeland Brand	50	
Deep Sea Brand	39	
Purity Brand	16	
Miscellaneous Brands	85	
		190
Canned Beans—		
Lady Washington Brand	491	
Morris Brand	33	
Armour's Brand	64	
Miscellaneous Brands	314	
Other Brands	46,124	
		47,026

		Total.
Canned Fish—		
Canned Salmon	159,368	
Deep Sea Halibut	344	
Herring	162	
Codfish	33	
Shrimp and Lobster	52	
Mackerel	25	
Eels	31	
		160,015
Sardines		553
Canned Meats—		
Rex Brand	422	
Morrell's Brand	541	
Armour's Brand	928	
Libby's Brand	760	
S. & S. Brand	924	
Morris' Brand	372	
Hammond Brand	70	
Miscellaneous Brands	5,169	
		9,186
Canned Turkey and Chicken		441
Extracts—		
Lemon	63	
Vanilla	33	
Banana, Maple, etc	50	
		146
Mincemeat		183
Peppersauce		26
Fruits (Canned)		42
Mustard and Horseradish		187
Jams		87
Pickles and Olives		1,631
Soups		132,067
Canned Corn		17,549
Miscellaneous		2,676
		372,903

FOOD SAMPLES ANALYZED.

Kind.	*Findings.*	*Total.*
Baking Powder	1 Legal	1 pkg.
Beverages—		
Orange Cider	2 Legal	
Grape Juice	4 Legal	
Pop	4 Legal	10 "
Butter	2 Legal	2 "
Catsup	1 Legal	
	4 Illegal	5 "
Cheese	2 Legal	2 "
Cider	12 Legal	
	1 Illegal	13 "
Eggs (Evaporated)	1 Illegal	1 "
Extracts	9 Illegal	
	2 Legal	11 "
Canned Fish—		
Shrimp	5 Legal	
	1 Illegal	6 "
Crab	3 Illegal	
	8 Legal	11 "
Salmon	24 Legal	
	24 Illegal	48 "
Halibut	2 Illegal	2 "
Sardines	24 Legal	24 "
Dried Fruits	1 Illegal	1 "
Honey	1 Illegal	1 "
Preserves	3 Illegal	
	11 Legal	14 "
Jellies	22 Legal	
	27 Illegal	49 "
Apple Butter	1 Illegal	1 "
Canned Meats	27 Illegal	
	33 Legal	60 "
Condensed Milk	4 Illegal	4 "

Kind.	*Findings.*	*Total.*
Miscellaneous—		
Peanut Butter	10 Legal	10 "
Pickles	3 Legal	
	3 Illegal	6 "
Lard	1 Legal	1 "
Bacon	1 Legal	1 "
Flour	1 Legal	1 "
Pop Color	1 Legal	1 "
Salad Oil	1 Legal	
	1 Illegal	2 "
Chili Sauce	1 Illegal	1 "
Soups	2 Illegal	2 "
Syrups	1 Legal	1 "
Vinegars	67 Legal	
	119 Illegal	186 "
	243 Legal	
	235 Illegal	478 pkg.

FOOD PROSECUTIONS.

No. 3191—State of Washington vs. Sulzberger & Sons Company of America (a corporation). Charge: Selling misbranded foods. Fined: $500 and costs. Appeal to the Superior Court.

No. 6689—State of Washington vs. Sulzberger and Sons Company. Fined: $500; salesman fined $50. Costs, $47.75. Fines and costs paid.

No. 3641—State of Washington vs. Sulzberger & Sons Company of America (a corporation). Charge: Selling adulterated foods. Fined: $75 and costs. Paid.

No. 3827—State of Washington vs. Morris and Company, Packers, (a corporation). Charge: Selling misbranded food. Fined: $200 and costs. Paid.

No. 6688—State of Washington vs. Seattle & Puget Sound Packing Co., et al. Fined: $500 and $60.70 costs. Case now on appeal to Supreme Court.

No. 6580—State of Washington vs. H. Marcus. Charge: Selling adulterated meats. Fined: $100. Appeal to Superior Court.

No. 6709—State of Washington vs. H. Marcus. Fined: $100 and $34.80 costs. Fines and costs paid.

No. 3189—State of Washington vs. The J. R. Grant Co., Inc., (a Washington corporation) and J. R. Grant. Charge: Selling adulterated food. Fined $500 and costs. Appealed to the Superior court.

No. 6702—State of Washington vs. J. R. Grant Co. and J. R. Grant. Verdict: Not guilty.

No. 3159—State of Washington vs. W. R. Brehm. Charge: Having adulterated food in his possession with intent to sell. Jury trial September 18th, 1913. Verdict: Not guilty.

No. 3167—State of Washington vs. H. A. Eba. Charge: Having adulterated food in his possession with intent to sell. Entered plea of not guilty. Case dropped from calendar September 19th, 1913.

No. 3190—State of Washington vs. Seattle and Puget Sound Packing Co. (a corporation) and Munroe Lewis, and William Lewis. Charge: Selling adulterated food. Fined: $500 and costs. Appealed to the Superior Court.

No. 1096—State of Washington vs. Morris & Co. Charge: Selling misbranded food. Fined: $25.00 and costs.

No. ....—State of Washington vs. Partridge & Co. Charge: Selling misbranded and adulterated food. Fined: $25.00 and costs.

No. ....—State of Washington vs. Armour & Co. Charge: Selling adulterated and unfit food. Fined, $200 and costs.

No. ....—State of Washington vs. W. W. Robinson Co. Case pending in Supreme Court.

PROSECUTIONS FOR OBSTRUCTING OFFICERS.

State of Washington vs. O. P. Anderson. Charge: Obstructing an officer in the performance of his duty. Fined $25 and given a jail sentence of 10 days. Jail sentence suspended.

BAKERY INSPECTION.

Beginning November 11th, 1913, and ending July 30th, 1914 (covering a period of 8½ months).

Bakeries Inspected:	
Graded as Good	66
Graded as Fair	152
Graded as Poor	56
Not in operation at time of inspection, but to open later	9
Total	283
Certificates sent out	139
Certificates refused to shops not meeting requirements	110
Certificates held for improvements to be made on shops	20
Reinspections of shops having certificates	14
Total	283
No. of towns visited on inspection trips	58

Inspections made in each town:

Seattle	93	Hoquiam	2
Olympia	3	Aberdeen	2
Ellensburg	2	So. Aberdeen	1
North Yakima	9	Montesano	1
Toppenish	2	Elma	1
Prosser	3	Everett	9
Pasco	5	Stanwood	1
Ritzville	2	Mt. Vernon	4
Spokane	35	Sedro Wooley	2
Cheney	2	Burlington	1
Hillyard	1	Bellingham	8
Rosalia	2	So. Bellingham	2
Colfax	1	Tekoa	1
Pullman	2	Endicott	1
Palouse	1	Chewelah	2
Garfield	2	Valley	1
Oakesdale	1	Kettle Falls	1
Walla Walla	9	Marcus	1
Dayton	2	Colville	2
Waitsburg	1	Newport	2
Kennewick	2	Ione	1
Mabton	1	Odessa	1
Sunnyside	2	Wilson Creek	1
Vancouver	2	Ephrata	1
Kalama	1	Wenatchee	2
Kelso	2	Cashmere	1
Chehalis	3	Leavenworth	1
Centralia	3	Raymond	2
Tacoma	31	South Bend	2

Many shops of the type of "home bakeries" which were too small to be classed as regular bake shops were also inspected by this Division. In addition to the towns named above the following towns were also visited and found to have home bakeries: Pateros, Brewster, Malott, Okanogan, Conconully, Riverside, Tonasket, Oroville, Curlew and Republic.

In practically all of the shops where needed improvements were ordered made, a re-inspection has revealed a marked improvement in the shop conditions.

The Bakery Inspector has also acted in the capacity of assistant food inspector, and in addition to the 283 bake-shops inspected, has inspected, 1,338 food establishments of various kinds—other than bakeries.

DRUGS.

Official Samples Taken and Analyzed.

Kind.	*Findings.*	*Total.*
Asperin	1 Legal	1 pkg.
Camphor	10 Legal	
	1 Illegal	11 "
Tincture of Iodine	11 Legal	
	8 Illegal	19 "
Essence of Peppermint	2 Legal	
	1 Illegal	3 "
Spirits of Nitre	1 Legal	
	6 Illegal	7 "
Oil of Almonds	4 Legal	4 "
Powdered Borax	1 Legal	1 "
Headache Powders	4 Legal	
	4 Illegal	8 "
Spirits of Turpentine	2 Legal	
	1 Illegal	3 "
Castoria	1 Legal	1 "
Cough and Cold Cures	6 Legal	
	6 Illegal	12 "
Bay Rum	1 Legal	
	1 Illegal	2 "
Tinc. of Arnica	1 Illegal	1 "
Hydrastis Powders	3 Legal	3 "
Miscellaneous	9 Legal	
	13 Illegal	22 "
Rheumatism Remedies	1 Legal	
	2 Illegal	3 "
Paregoric and Soothing Syrups	3 Legal	
	1 Illegal	4 "
Blood Medicines	1 Legal	1 "
Milk of Bismuth	2 Legal	2 "
Nux Vomica	3 Legal	3 "
Celery Tonic	1 Illegal	1 "
Hair Tonic	6 Legal	
	2 Illegal	8 "
Toothache Drops	1 Legal	
	3 Illegal	4 "
Hydrogen Peroxide	1 Legal	
	1 Illegal	2 "
Carbolic Acid	1 Illegal	1 "
Sweet Oil	12 Legal	
	16 Illegal	28 "
	87 Legal	
	68 Illegal	
	155 Total	155 Total

Total number of inspections made from August 1st, 1913, to May 9th, 1914. 796

Total number of packages of drugs destroyed or ordered from the shelves...2410

DRUG PROSECUTIONS.

No. 3772—State of Washington vs. Bartell Drug Company. Action dismissed on motion of prosecuting witness.

No. 67—State of Washington vs. L. D. P. Collins. Fined: $25 and $1.50 costs. Paid.

No. 383—State of Washington vs. Munch Stewart Drug Co. Case dismissed on motion of Prosecuting Attorney of Skagit Co.

No. 3599—State of Washington vs. C. Thacker. Charge of misbranding drugs. Fined: $25 and costs. Paid.

No. 3773—State of Washington vs. L. F. Swift. Charge of misbranding drugs. Fined: $25 and costs. Paid.

No. 3845—State of Washington vs. Amos Swanson. Charge of misbranding drugs. Fined: $25 and costs. Paid.

No. 3032—State of Washington vs. S. H. Beall. Case dismissed. Defendant paid $3.70 costs.

No. 3033—State of Washington vs. J. E. Shutts. Defendant forfeits $25 cash bail.

No. 3034—State of Washington vs. H. R. Cole. Defendant forfeits $25 cash bail.

No. 9359—State of Washington vs. Crown Drug Company of Tacoma. Defendant forfeits $25 cash bail.

No. — —State of Washington vs. J. J. Yuill. Defendant forfeits $25 cash bail.

No. — —State of Washington vs. M. L. McMillan. Charge: Misbranding drugs. Fined: $25 and costs. Paid.

FERTILIZERS.

Official Samples Taken and Analyzed.

At Anacortes	2
Bellingham	23
Everett	1
Portland, Ore.	14
Seattle, Wash.	23
Spokane	22
Tacoma	21
North Yakima	4
Walla Walla	2
Vancouver, Wash.	7
Total	119

Analytical Fees for Fertilizers Collected.

Russia Cement Co., Anacortes	12.00
Robinson Fisheries Co., Anacortes	12.00
Union Meat Co., Portland, Ore.	108.00
Chas. H. Lilly Co., Seattle, Wash.	186.00
Frye & Co., Seattle, Wash	12.00
W. R. Grace & Co., Seattle, Wash	6.00
Pacific Products Co., Seattle, Wash	12.00
Balfour-Guthrie Co., Seattle, Wash	36.00
Aabling Ebright Co., Seattle, Wash	18.00
Empire Packing Co., Spokane, Wash	42.00
E. H. Stanton Co., Spokane, Wash	30.00
Inland Seed Co., Spokane, Wash	18.00
S. Blackley, Colton	18.00
U. S. Phosphate Co., Salt Lake, Utah	6.00
Walla Walla Meat & Storage Co., Walla Walla, Wn.	30.00
Washington State College, Pullman	64.67
James Henry, Seattle, Wash	18.00
Carstens Packing Co., Tacoma, Wash	42.00
Western Fertilizer Co., San Francisco, Cal	18.00
Total	$688.67

OILS.

Hon. J. J. Higgins:

Dear Sir: I have the honor of submitting to you, our annual report pertaining to the Department of the Inspection of Oils in the State of Washington. You will note this report we date from June 1st, 1913, to June 30, 1914.

During the year we have had an almost constant monthly increase in gallonage of various oils that we inspected under the laws of the State of Washington, which will be shown by the detailed tabulated reports given below. It is not without some degree of satisfaction to report that practically every gallon of oil requiring inspection under our laws has been secured during the past year, and the collections of fees for same promptly collected and turned in to the State Treasurer at Olympia.

The Department has been, and is, more or less handicapped in the matter of the purest and best products, owing to certain indefiniteness of our laws relating to the inspection of oils.

In the matter of kerosene oil we call your attention to the standard required to be given in Fahrenheit degrees before it passes our approval. We are required to approve any kerosene oil that ignites and burns at 120 degrees and upward, and to reject any and all kerosene that ignites and burns under 120 degrees Fahrenheit. The law makes no provision for any limit above 120 degrees, thus opening the way for bringing in of heavy or unsatisfactory oil used for illuminating purposes, some complaints having reached this office because of a smoky and disagreeable odor arising from the lamps.

When the law was first enacted there was less demand for gasoline and distillates than there is at the present time, thus resulting in extracting all the gas possible from the kerosene without wholly impairing its illuminating qualities. It would appear from the above that the Fahrenheit standard should be raised at least five degrees, and a limit placed thereon, say not to exceed 145 degrees Fahrenheit. In the matter of gasoline, benzine, naphtha and the distillates the law requires no specific standard, therefore the only prerogative given the inspector is that of furnishing a certificate, stating the exact degree Baume as found at the time of the inspection. A standard should be made in the matter of gasoline of at least sixty-one degrees Baume; benzine fifty-seven degrees; and distillate not less than fifty-two degrees Baume; thus establishing a fixed standard that would render it more difficult for these degrees to be changed by the mixing of gasoline and distillate after it reaches the retail vendor.

It is true that the above is partly overcome and regulated by a provision in the law requiring each and every vendor to sell said article at the exact degree given by the inspector, which provision we regret to say is not wholly carried out notwithstanding the vigorous and personal efforts on the part of the deputies to see that this provision of the law is enforced. There have been no prosecutions pertaining thereto for the reason that there seems to be no penal code sufficiently explicit to reach this provision as herein indicated.

We have the honor, however, to report that very few complaints have reached this Department, and but two serious disasters from fire; one resulting from an attempt to build a fire with distillate; the other through great negligence in the management of a kerosene lamp. There are some complaints here and there, of dirt, and sometimes water, being found in this illuminating oil. There should be a provision in the law requiring every oil vendor using tanks or other receptacles in the matter of the retail of these oils, to thoroughly cleanse and dry out his tank or receptacle at least once per annum. The time for such cleaning should be during the month of October in each year.

We take pleasure in reporting the Department well organized and in excellent condition, which can readily be seen from the tabulated statement of figures relative to quantities, together with fees for inspection as given therein. The work has been done with fewer men and less expense than in recent years, thus showing a very satisfactory increase of revenue to the state.

Respectfully submitted,
S. P. WILSON,
State Oil Inspector.

MONTHLY OIL INSPECTIONS.

July 1st, 1913, to July 1st, 1914.

JULY, 1913.

Article.	*Gallons.*	*Fees Collected.*
Kerosene	289,099	
Gasoline	1,070,125	
Benzine	4,207	
Distillate	896,797	
Total	2,260,228	$ 4,520.45

AUGUST, 1913.

Article.	*Gallons.*	*Fees Collected.*
Kerosene	111,863	
Gasoline	1,490,704	
Naphtha	106,052	
Benzine	63,963	
Distillate	1,210,421	
Total	2,983,003	$ 5,968.44

SEPTEMBER, 1913.

Article.	*Gallons.*	*Fees Collected.*
Kerosene	1,518,790	
Gasoline	1,177,490	
Naphtha	105,324	
Benzine	5,737	
Distillate	1,283,592	
Total	4,090,933	$ 8,184.38

OCTOBER, 1913.

Article.	*Gallons.*	*Fees Collected.*
Kerosene	899,608	
Gasoline	670,142	
Benzine	2,605	
Distillate	726,026	
Total	2,298,381	$ 4,599.21

NOVEMBER, 1913.

Article.	*Gallons.*	*Fees Collected.*
Kerosene	475,646	
Gasoline	984,200	
Naphtha	202,020	
Benzine	2,370	
Distillate	343,719	
Total	2,007,955	$ 4,020.76

DECEMBER, 1913.

Article.	*Gallons.*	*Fees Collectrd.*
Kerosene	594,573	
Gasoline	709,338	
Benzine	2,125	
Distillate	410,653	
Total	1,716,689	$ 3,446.18

JANUARY, 1914.

Article.	*Gallons.*	*Fees Collected.*
Kerosene	671,999	
Gasoline	834,165	
Naphtha	1,500	
Benzine	1,585	
Distillate	1,121,085	
Total	2,630,334	$ 5,064.82

FEBRUARY, 1914.

Article.	*Gallons.*	*Fees Collected.*
Kerosene	503,634	
Gasoline	2,157,790	
Naphtha	475,195	
Benzine	127,305	
Distillate	708,986	
Total	3,972,910	$ 7,947.42

MARCH, 1914.

Article.	*Gallons.*	*Fees Collected.*
Kerosene	657,215	
Gasoline	1,254,350	
Naphtha	1,220	
Benzine	1,255	
Distillate	574,485	
Total	2,488,525	$ 4,979.50

APRIL, 1914.

Article.	*Gallons.*	*Fees Collected.*
Kerosene	1,787,045	
Gasoline	1,148,935	
Naphtha	92,345	
Benzine	2,375	
Distillate	1,594,705	
Total	4,625,405	$ 9,255.71

MAY, 1914.

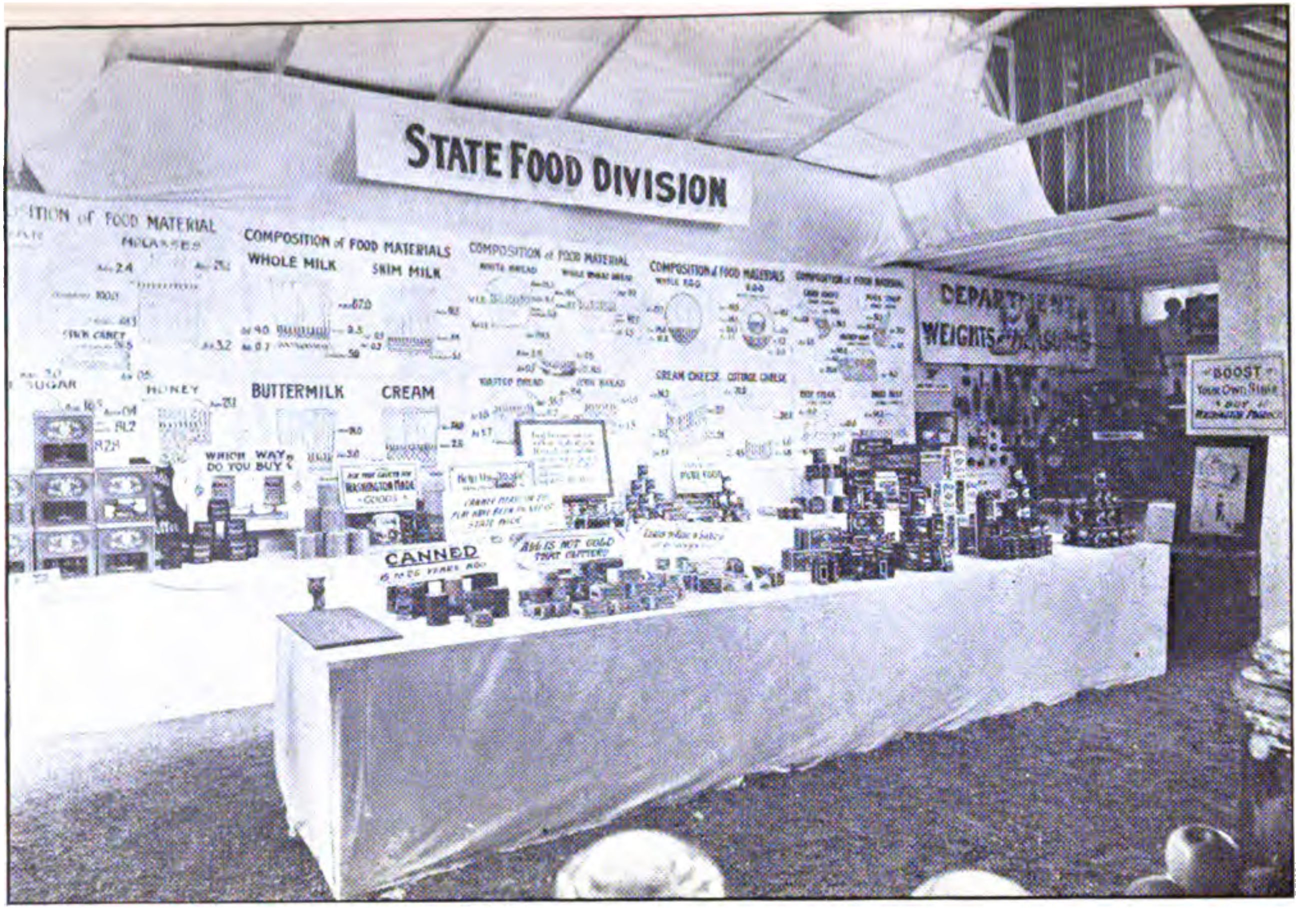
Article.	*Gallons.*	*Fees Collected.*
Kerosene	1,124,560	
Gasoline	1,599,690	
Naphtha	247,180	
Benzine	14,625	
Distillate	1,354,155	
Total	4,340,210	$ 8,680.42

JUNE, 1914.

Article.	*Gallons.*	*Fees Collected.*
Kerosene	345,125	
Gasoline	1,428,305	
Naphtha	3,985	
Benzine	1,265	
Distillate	867,955	
Total	2,646,635	$ 5,295.27

TOTAL INSPECTIONS FOR YEAR.

Article.	*Gallons.*	*Fees Collected.*
Kerosene	8,979,157	
Gasoline	14,525,234	
Naphtha	1,234,821	
Benzine	229,417	
Distillate	11,092,579	
Total	36,061,208	$71,962.51



STATE EDUCATIONAL FOOD EXHIBIT.

UNIV. OF CALIFORNIA

SEED LABORATORY REPORT.

The following is a report of the work of the Seed Laboratory together with methods used in seed-testing, from January 1st, 1914, to June 30th, 1914.

OBJECT OF THE SEED LABORATORY.

The object of the Seed Laboratory is to give correct information concerning seed. Good seed is one of the requirements of good farming, in fact, a most important requisite. The effort of the Department is to get the farmer to realize and appreciate this fact.

OBJECT OF THE SEED LAW.

The object of the Pure Seed Law is to have the buyer know just what he is buying. It provides a means by which farmers and other purchasers of seed may protect themselves against noxious weeds and against seeds that are of low vitality. It also provides a protection for conscientious dealers against unscrupulous ones.

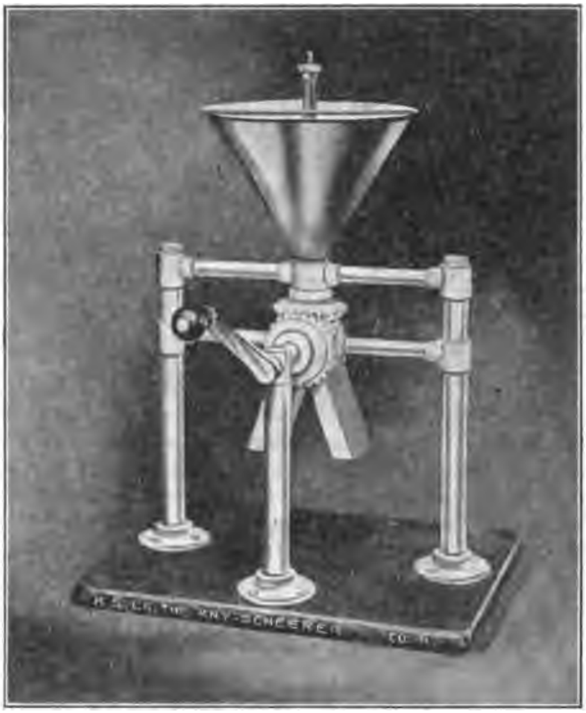
It is not the intention of the law to hurt dealers doing a legitimate business or in any way to work a hardship on them.

METHODS OF SEED TESTING.

When samples are submitted for a test they should be taken at random from the different parts of the sack or bin. Two or three tablespoons full or a good handful of seed is sufficient for the test of most seeds. When the sample is received it is given a laboratory number which marks all cards and envelopes used in filing this sample of seed.

The Seed Laboratory is equipped with practically the same apparatus that is used in all the seed laboratories of the U. S. Department of Agriculture.

Purity Test.

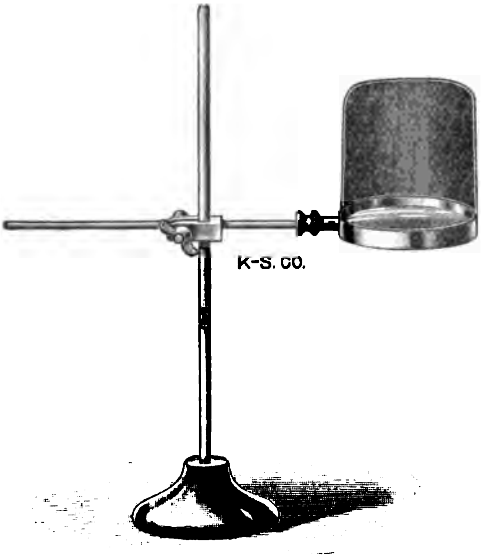


Courtesy of The Kny-Scheerer Co.

FIG. 1. SEED MIXER AND SAMPLER.

The machine used in Figure 1 is used in mixing and dividing the sample. The sample is put into the revolving funnel. The thumbscrew at the top regulates the opening. As the crank is turned the sample is accurately divided into two parts and thoroughly mixed. The seed from one of the receptacles can be divided as many times as is necessary.

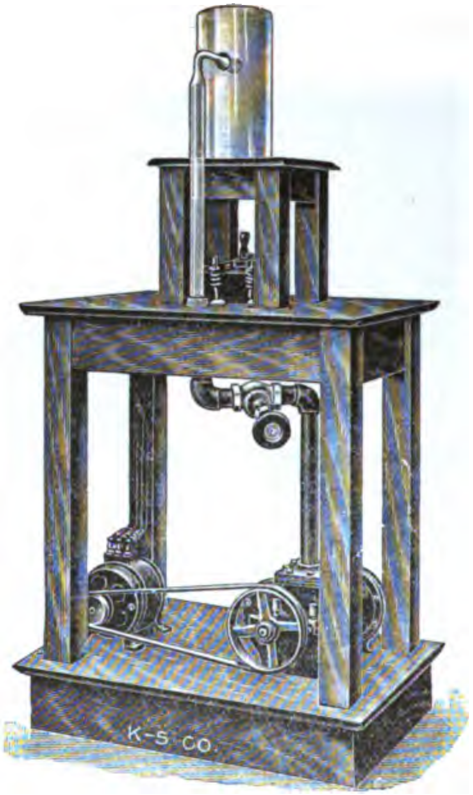
A nest of sieves will greatly facilitate a seed test by sifting the weighed sample.



Courtesy of The Kny-Scheerer Co.

FIG. 2. MAGNIFYING LENS.

Fig. 2. shows a magnifying lens which is well adapted for purity tests of small seeds.



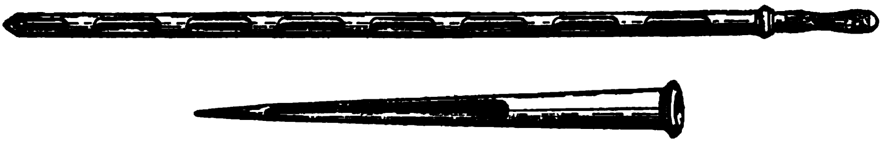
Courtesy of The Kny-Scheerer Co.

FIG. 3. VERTICAL AIR-BLAST SEPARATOR.

By means of the Air-Blast Separator shown in Feg. 3 very close separations can be made between pure seed and chaff or inert matter that are lighter than the seed. The blower is run by a dynamo which when in motion turns the air into the blowing tube by means of a valve. The bottom of the tube is covered with bolting cloth.

The sample to be cleaned is put into the blowing tube which fits into the receiving cylinder. The air gradually raises the seed in the tube and the foreign matter is carried into the receiving cylinder and falls on a paper. The sample is then placed on a working-table and separated into (1) pure seed; (2) weed and other seeds; (3) inert matter.

After the test sample is obtained it is accurately weighed. After being weighed it is then ready for analysis. The percentages are worked out after the divisions are made. Great care must be exercised in analyzing a test, and it requires patience and skill in identifying the seeds of weeds and commercial plants.



Courtesy of The Kny-Scheerer Co.

FIG. 4. SEED SAMPLERS.

Fig. 4 shows Seed Samplers used in taking samples from different parts of a sack for a test.

Kind

Received Germination

Sent by

Address

Remarks

		Made by—	Date	Re-ported
	Identification			
	Examination			
	Purity test			

Pure Seed Per cent	Inert Matter Per cent	Foreign Seed Per cent	Verified by—	Grams Used

Character of inert matter

Foreign seeds

FIG. 5. RECORD CARD.

A sample of the Record Card used is shown in Fig. 5. When the percentages are found they are placed on the Record Card. Each lot of foreign seed is correctly named and entered on the card together with the number found. The report sent out to the individual gives the common names of weeds and the approximate number per pound of each weed seed found.

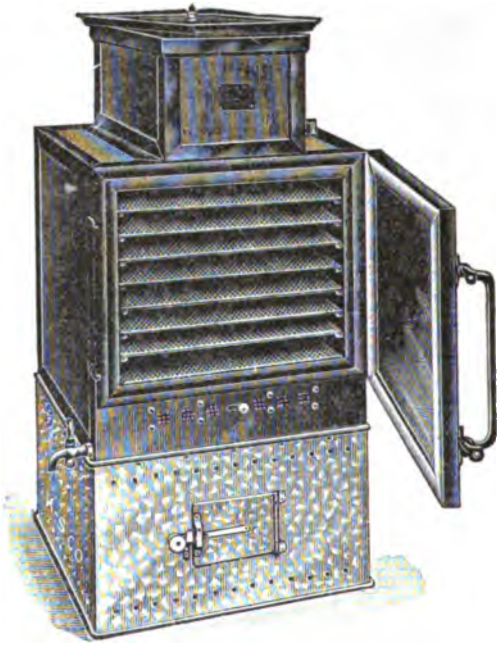
ADULTERATIONS.

The commercial seeds commonly adulterated are, alfalfa, red clover, red top and Kentucky blue grass. Weed seeds of the same appearance are used for adulterating. Alfalfa is adulterated with bur clover, sweet clover and trefoil. Sweet clover and yellow trefoil are used in red clover as adulterants. Red top is adulterated with timothy while Kentucky blue grass is often adulterated with Canada blue grass. These things must be considered in making a seed test.

GERMINATION.

Farmers have long appreciated the value of giving seed corn the germination test but have been slow in recognizing the value of a test for small grains.

It is of equal importance to know that seeds are of good vitality as to know that they are free from certain noxious weeds.



Courtesy of The Kny-Scheerer Co.

FIG. 6. STANDARD GERMINATING CHAMBER.

Fig. 6 shows the Germinating Chamber used in making the germinating test. Climatic conditions are represented as nearly as possible in this chamber. It is provided with a temperature thermostat which regulates the temperature very accurately.

Different seed beds are used for the different kinds of seeds. Large seeds such as corn are germinated between folds of Canton flannel. Other seeds are germinated between moist folds of blotting paper such as wheat and alfalfa; while small seeds such as red top and timothy are germinated on top of blotting paper.

In alfalfa and clover a number of "hard seeds" are usually found. This is a matter of importance for while they are comparatively good seed they do not germinate in the required length of time.

Seeds are to be avoided when "hard seeds" occur in a large percentage.

THE LAW PROVIDES FOR:

(1) The inspection of commercial seed in the markets of this state.

(2) The enforcement of the law and penalties for violation.

(3) Proper labeling of agricultural seeds sold in lots of one pound or more.

(4) That seed offered for sale in this state must be free from the seeds of wild mustard or charlock, quack grass, Canada thistle, wild oats, dodder and corn cockle.

(5) The free testing of seeds for any resident of the state who is going to use the seed himself.

OFFICIAL INSPECTIONS.

Of the 218 seed markets inspected in 61 different cities from January 1st to June 30th, 1914, 154 were found in good condition while the remaining 64 were found somewhat negligent in proper labeling and the care of seed in stock.

The method of labeling is left with the wholesale dealer so long as it meets the requirements of the law. Some stencil the sacks; others attach tags to them. Some wholesale dealers send a duplicate copy of the purity and germinating report with the shipment of seeds which is highly commendable. This enables the buyer to know just what he is buying.

The following table shows the number of samples tested during the past six months and the source of same:

TABLE I.

Sources of Samples and Kind of Test Made.

Sample Sent by	Number of Samples	Identification	Examination	Purity	Germination	Total Tests
Individuals	90	13	15	58	77	163
Dealers	58	7	51	66	67	191
Inspectors	34	....	47	22	29	98
Totals	182	20	113	146	173	452

TABLE II.

Report upon the Occurrence of Foreign Seeds in Forty Samples of Alfalfa Seed (Medicago sativa).

Kind of Seeds Found and Number of Samples Containing Them.

Green foxtail (Chaetochloa viridis)	16
Yellow foxtail (Chaetochloa glauca)	8
Buckhorn (Plantago lanceolata)	11
Mints (Labiatae)	1
Rocquette (Eruca sativa)	1
Timothy (Phleum pratense)*	5
Dodder (Cuscuta spp)†	3
Canada blue grass (Poa compressa)*	1
Wire grass (Eleusine Indica)	1
Russian thistle (Salsola tragus†)	1
Red Clover (Trifolium pratense)*	8
Rye grass (Lolium perenne)*	1
Smart weed (Polygonum sp.)	1
Chicory (Chichorium intybus)	3
Lamb's quarters (Chenopodium album)	13
Corn flower (Centaurea sp.)	8
Grass (Gramineae sp.)	2
Mallow (Malva sp.)	1
Alsike clover (Trifolium hybridum)	3
Wild buckwheat (Polygonum convolvulus)	2
Bull thistle (Carduus lanceolatus)	1
Yarrow (Achillea millefolium)	3
Winter cress (Barbarea vulgons)	1
Curled dock (Rumex crispus)	6
Crimson clover (Trifolium incarnatum)*	1
Bird's foot trefoil (Lotus corniculatus)	1
Wild teasel (Dipsacus sylvestris)	1
Pepper grass (Lepidum apetalum)	1
Goosefoot (Chenopodium sp.)	1
False buckwheat (Polygonum scandens)	1
Barnyard grass (Panicum crusgalli)	4
Wild sunflower (Helianthus annuus)	1
Chickweed (Stellaria media)	1
Amaranth (Amaranthus sp.)	1

TABLE III.

Report upon the Occurrence of Foreign Seeds in Thirty-three Samples of Red Clover Seed (Trifolium pratense).

Kind of Seeds Found and Number of Samples Containing Them.

Buckhorn (Plantago lanceolata)	22
Sheep sorrel (Rumex actosella)	25
Cut-leaves cranes bill (Geranium dissectum)	1
Green foxtail (Chaetochloa viridis)	10
Lamb's quarters (Chenopodium album)	9
Tumble weed (Amaranthus graecizans)	1
Prickly lettuce (Lactuca virosa)	1
Large bracted plantain (Plantago aristata)	1
White clover (Trifolium repens)*	5
Timothy (Phleum pratense)*	5
Rye (Secale cereale)*	1
Dodder (Cuscuta spp.)	2
Crab grass (Digitaria sanguinalis)	1
Shepherd's purse (Capsella Bursa-pastoris)	1
Prairie sunflower (Helianthus petiolaris)	1
Sour dock (Rumex acetosa)	1
Curled dock (Rumex crispus)	5
Barnyard grass (Panicum crusgalli)	10
Russian thistle (Salsola tragus)†	4
Grass (Gramineae sp.)	7
Witch grass (Panicum capillare)	5
Canada blue grass (Poa compressa)*	1
Bull thistle (Carduus lanceolatus)	16
Black mustard (Brassica nigra)	2
Charlock (Brassica arvensis)†	2
Chess (Bromus secalinus)	1
Alsike clover (Trifolium hybridum)*	5
Rye grass (Lolium spp)*	6
Mayweed (Anthemis cotula)	4
Heal-all (Prunella vulgaris)	3
Jerusalem oak (Chenopodium Botrys)	1
Pigweed (Amaranthus retroflexus)	2
Bird's foot trefoil (Lotus corniculatus)	1
Chickweed (Stellaria media)	1

TABLE IV.

Report upon the Occurrence of Foreign Seeds in Ten Samples of White Clover Seed (Trifolium repens).

Kind of Seeds Found and Number of Samples Containing Them.

Sheep sorrel (Rumex actosella)..	7
Buckhorn (Plantago lanceolata).	6
Bladder campion (Silene latifolia	1
Mayweed (Anthemis cotula).....	4
Alsike clover (Trifolium hybridum)*	5
Timothy (Phleum pratense)*....	5
Black medic (Medicago lupulina)	3
Curled dock (Rumex crispus)....	1
Tumbling amaranth (Amaranthus graecigans)	1
Field camomile (Anthemis arvensis)	1
Thyme-leaved sand-wort (Arenaria serpyllifolia)	1
Grass (Gramineae sp.).........	1
Lamb's quarters (Chenopodium album)	5
Pepper grass (Lepidium apetalum)	1
Pigweed (Amaranthus retroflexus)	1
Shepherd's purse (Capsella Bursa-pastoris)	2
Plantain (Plantago major)......	4
Lesser starwort (Alsine gramineae)	1
Green foxtail (Chaetochloa viridis)	2

TABLE V.

Report upon the Occurrence of Foreign Seeds in Twelve Samples of Alsike Clover (Trifolium hybridum).

Kind of Seeds Found and Number of Samples Containing Them.

Sheep sorrel (Rumex actosella)..	11
Buckhorn (Plantago lanceolata)..	7
White clover (Trifolium repens)*	10
Timothy (Phleum pratense)*....	5
Bird's foot trefoil (Lotus corniculatus)	2
Mayweed (Anthemis cotula).....	2
Prairie mesquite (Prosopis glandulosa)	1
Rye grass (Lolium perenne)*...	2
Witch grass (Panicum capillare)	3
Trefoil (Medotus officinalis).....	1
Lamb's quarters (Chenopodium album)	1
Lady's thumb (Polygonum persicaria)	1
Grass 'Gramineae sp.)..........	2
Red clover (Trifolium pratense)*	3
Pigweed (Amaranthus retroflexus)	1
Velvet grass (Holcus lanatus)...	1

TABLE VI.

Report upon the Occurrence of Foreign Seeds in Eighteen Samples of Timothy Seed (Phleum pratense).

Kind of Seeds Found and Number of Samples Containing Them.

Plantain (Plantago major)	5
Sheep sorrel (Rumex actosella)..	12
Chickweed (Alsine media)	2
Curled dock (Rumex crispus)...	4
Yarrow (Achillea millefolium)...	11
Bull thistle (Carduus lanceolatus)	2
Wild sunflower (Helianthus annuus)	1
Kentucky blue grass (Poa pratensis)*	5
Red clover (Trifolium pratense)*	4
Alsike (Trifolium hybridum)*...	5
Redtop (Agrostis sp.)*.........	1
Pigweed (Amaranthus retroflexus)	2
White clover (Trifolium repens).	3
Grass (Gramineae sp.)..........	2
Creeping buttercup (Ranunculus repens)	1
White hoarhound (Marubium vulgare)	1
Alfalfa (Medicago sativa)......	1
Common sow thistle (Sonchus oleraceus)	1
Lamb's quarters (Chenopodium album)	4
Undetermined	1
Prickly lettuce (Latuca virosa)..	1
Heal-all (Prunella vulgaris)	1
Buckthorn (Plantago lanceolata).	2
Perennial sow thistle (Sonchus arvensis)	1

TABLE VII.

Report upon the Occurrence of Foreign Seeds in Five Samples of Oats (Avena sativa).

Kind of Seeds Found and Number of Samples Containing Them.			
Wheat (Triticum)*	2	Black bindweed (Polygonum convolvulus)	1
Wild oats (Avena fatua)†	3	Vetch (Vicia spp)*	2

TABLE VIII.

Report upon the Occurrence of Foreign Seeds in Two Samples of Kentucky Blue Grass (Poa pratensis).

Kind of Seeds Found and Number of Samples Containing Them.			
Smart weed (Polygonum persicaria)	1	Pepper grass (Lepidium apetalum)	1

TABLE IX.

Report upon the Occurrence of Foreign Seeds in Two Samples of Italian Rye Grass Seed (Lolium italicum).

Kind of Seeds Found and Number of Samples Containing Them.			
Rye (Secale cereale)*	1	Curled dock (Rumex crispus)	1

TABLE X.

Report upon the Occurrence of Foreign Seeds in Three Samples of Orchard Grass (Dacytylis glomerata).

Kind of Seeds Found and Number of Samples Containing Them.			
Buttercup (Ranunculus sp.)	1	Red clover (Trifolium pratense)*	1
Field camomile (Anthenus arvensis)	1	Kentucky blue grass (Poa pratensis)*	2

TABLE XI.

Report upon the Occurrence of Foreign Seeds in Four Samples of Redtop (Agrostis alba).

Kind of Seeds Found and Number of Samples Containing Them.			
Yarrow (Achillea millefolium)	3	Witch grass (Panicum capillare)	2
Flea bane (Erigeron sp.)	1	Timothy (Phleum pratense)*	1

TABLE XII.

Report upon the Occurrence of Foreign Seeds in Three Samples of Millet Seed (Seteria italica).

Kind of Seeds Found and Number of Samples Containing Them.

Bouncing bet (Saponaria officinalis)	1	Corn cockle (Agrostemma githago)†	1
Lady's thumb (Polygonum persicaria)	2	Lamb's quarters (Chenopodium album)	1
Green foxtail (Chaetochloa viridis)	1	Nightflowering catchfly (Silene noctifloral)	1
False buckwheat (Polygonum scandens)	1	Pepper grass (Lepidium apetalum)	1

* Agricultural Seeds.
† Noxious weeds.

It will be observed by the above tables that noxious weed seeds do not occur in large numbers in proportion to the number of tests made. The enforcement of the seed law has greatly decreased the sale of agricultural seed containing dodder and other noxious weed seeds.

Through the medium of the Seed Laboratory, the Department of Agriculture is now prepared to make tests free of charge to citizens of the State. Requests for seed tests and inquiries as to seeds and plants should be addressed to the Seed Laboratory, Department of Agriculture, Olympia, Washington.

Respectfully submitted,
KATHERINE G. STONE,
Seed Analyst.

WASHINGTON STATE FAIR

The Washington State Fair is one of the most important divisions of the Department and was placed under the authority of the Commissioner by the act creating the Department of Agriculture.

In planning the 1913 Fair an effort was made by the Commissioner to firmly establish the fair as an important agricultural institution. Special inducements were offered the various counties of the state in attracting representative agricultural displays in order that the exhibits might represent a complete collection of the state's resources.

In addition the Commissioner undertook the important task of strengthening the various other divisions of the fair which for some unexplainable cause had been retarded in development until they were no longer representative of the state, but instead had become more of a local feature.

From the standpoint of exhibits the 1913 Fair was a success, and the Department received many notices of commendation from the press and the public. While the attendance was good it fell far short of expectations and showed a decrease from the estimated figures. The result financially was that out of an appropriation of $40,000 for the fair during the years of 1913 and 1914, and from which sum there was deducted $7,875.15 as a deficiency appropriation for the 1912 Fair, there remained on March 1, 1914, $3,454.83 for carrying out the 1914 Fair.

FINANCIAL STATEMENT NOV. 1, 1914.

Appropriation		$40,000 00
Expended for deficiency, 1912	$7,875 15	
Expended for 1913 Fair	28,670 02	
Expended for 1914 Fair	3,454 83	$40,000 00

Owing to the small balance remaining in the appropriation and estimating the probable cost of the 1914 Fair it was very evident to the Advisory Board of the Department that a policy of strict economy need be established and that the fair continue to be conducted along the broad lines of a state institution. No material reduction was made in the premium list for the year of 1914, in fact, many cash awards in the agriculture and horticulture divisions were increased in order to draw the best displays.

The 1914 Fair was a successful exhibition of which the citizens were justly proud and which was pleasing and satisfactory to those responsible for the fair.

The present accommodations for exhibits are inadequate. The overflow taxed the capacity of the fair to the utmost. It was necessary to erect eight tents of 40 by 50 feet each to accommodate this increase which will be still larger in 1915 and will grow with each succeeding year. Nothing in the way of permanent improvements was attempted during the year of 1914, yet to keep pace with the state's development additional buildings are now required.

Buildings most urgently needed should receive first attention. The present grandstand is old and inadequate. Extra stabling accommodations must also be made. In fact from this time on something substantial in the way of improvements should be added annually so the state fair may keep pace with the state's progress. The state exhibition grounds should be attractive and a place of beauty.

The city of North Yakima has proven to be an excellent location for an institution of this kind, being as near centrally located to the producing sections of the state as possible to find. The people of that city have shown an almost unparalleled spirit in supporting it, giving their time and service freely, in order that the institution might be a success to other sections of the state as well as their own, and the success of the institution during the past biennium has been due in no small measure to the organized assistance this Department has received from civic and commercial bodies of the Yakima Valley.

FINANCIAL STATEMENT

FINANCIAL STATEMENT, APRIL 1 TO JUNE 12, 1913, AT CLOSE OF BUSINESS BY FORMER OFFICERS.

FUND	Amount Appropriated	Expended During 2 11-30 Months	Balance
Horticulture	$75,000 00	$6,234 75	$68,765 25
Veterinarian	15,000 00	1,864 30	13,135 70
Dairy and Food	46,600 00	4,335 02	42,264 98
Oil	18,800 00	1,526 90	17,273 10
State Fair	40,000 00	9,857 59	30,142 41
Totals	$195,400 00	$23,818 56	$171,581 44

Printing—No expenditures April 1st to June 12th.

STATEMENT AT BEGINNING OF BUSINESS BY THE DEPARTMENT OF AGRICULTURE, JUNE 12, 1913.

Division Horticulture		$75,000 00	$6,234 75	$68,765 25
Division Dairy and Livestock—				
Dairy and Food	$22,700 00	37,700 00	2,108 35	33,727 35
Veterinarian	15,000 00		1,864 30	
Division Foods, Feeds, etc.—				
Dairy and Food	$23,900 00	42,700 00	2,226 67	38,946 43
Oil	18,800 00		1,526 90	
State Fair—				
For deficiency 1912—Not over	$8,500 00	40,000 00	7,875 15	30,142 41
From balance appropriation			1,982 44	
Totals		$195,400 00	$23,818 56	$171,581 44

REMARKS: After above closing; 20 vouchers amounting to $573.62, incurred by former State Veterinarian were received, certified by him and were paid by and included in the expenditures of this Department. The actual expenditures therefore by former veterinarian for 2 11-30 months were $2,437.92 out of appropriation of $7,500.00 for the full year.

FINANCIAL STATEMENT FOR PERIOD AND MONTH ENDING SEPTEMBER 30, 1914.*

FUND		Amount Appro-priated	Expended During Month of September	Expended During 18 Months	Balance October 1, 1914
Horticulture Division—					
Office salaries	$396 68	$75,000 00	$3,289 60	$56,725 71	$18,274 29
Office expense	116 10				
Field salaries	1,928 00				
Field expense	848 82				
Dairy and Livestock—					
Office salaries	$180 00	37,700 00	1,542 67	26,575 12	11,124 88
Office expense	116 59				
Field salaries	655 00				
Field expense	591 08				
Foods, Feeds, etc.—					
Office salaries	$496 68	42,700 00	1,854 94	30,265 78	12,434 22
Office expense	163 28				
Field salaries	700 00				
Field expense	495 08				
State Fair—					
Administration	$528 30	40,000 00	753 37	39,375 15	624 85
Premiums, etc.	140 00				
State printing	85 07				
Totals..............	$7,440 58	$195,400 00	$7,440 58	$152,941 76	$42,458 24
Printing—					
Horticulture		$1,500 00	....	$393 87	$1,106 13
Veterinarian		200 00	....	155 21	44 79
Dairy and Food..................		1,500 00	....	1,344 94	155 06
Oil Inspection		200 00	....	128 44	71 56
Totals.........................		$3,400 00	....	$2,022 46	$1,377 54

COLLECTIONS	During September	Previous	Total
Dairy and Livestock...............................	$283 00	$4,747 00	$5,030 00
Horticulture	10 00	1,515 49	1,525 49
Foods, Feeds, etc.................................	6,370 07	82,251 89	88,621 96
Agricultural Division	....	11 50	11 50
Totals..	$6,663 07	$88,525 88	$95,188 95

* In this statement showing the disbursements made from the various appropriations, there is included $23,818.56, which amount was expended by former officials prior to the beginning of business by the Department of Agriculture on June 12, 1913.

The statement covering receipts, however, includes only collections made by this Department. During the first few months subsequent to the organization of the Department, the collections were considerably smaller than the amounts collected during the several months of the past year. It is estimated that the receipts during the next biennium will approximate $165,000.00. These figures are based on our present monthly collections, to which are added probable receipts accruing from the Commercial Feeding Stuffs Act.

APPENDIX

REPORT OF THE INTERNATIONAL COMMISSION ON THE CONTROL OF BOVINE TUBERCULOSIS.

MEMBERS.

Dr. J. G. Rutherford, Ottawa, Canada, *Chairman.*
Dr. M. H. Reynolds, St. Paul, Minn., *Secretary.*

Senator W. C. Edwards, Ottawa, Canada.
Mr. J. J. Ferguson, Chicago, Ill.
Mr. J. W. Flavelle, Toronto, Can.
Hon. W. D. Hoard, Fort Atkinson, Wis.
Dr. C. A. Hodgetts, Toronto, Can.
Dr. J. N. Hurty, Indianapolis, Ind.
Dr. J. R. Mohler, Washington, D. C.
Dr. V. A. Moore, Ithaca, N. Y.
Dr. M. P. Ravenel, Madison, Wis.
Dr. E. C. Schroeder, Washington, D. C.
Mr. T. W. Tomlinson, Denver, Colo.
Dr. F. Torrence, Winnepeg, Can.

MEETINGS.

First meeting, Buffalo, N. Y., December 13 and 14, 1909.
Second meeting, Detroit, Mich., March 1 and 2, 1910.
Third meeting, Ottawa, Canada, May 19, 20 and 21, 1910.
Fourth meeting, Madison, Wis., June 27 and 28, 1910.

By the American Veterinary Medical Association in anual meeting assembled, at Chicago, Illinois, in the month of September, in the year nineteen hundred and nine, the following gentlemen were constituted an International Commission to study the methods of the control of Bovine Tuberculosis, and to submit a report to the Association, on the occasion of its next annual meeting—

J. G. Rutherford,
Leonard Pearson,
V. A. Moore,
Hon. W. D. Hoard,
Frederick Torrence,
M. H. Reynolds.
Hon. W. C. Edwards,
C. A. Hodgetts, M. D.
J. R. Mohler.
Louis F. Swift,
J. W. Flavelle,
E. C. Schroeder.

The Commission met at Buffalo, New York, on the fifteenth day of December, nineteen hundred and nine, and elected as Chairman, Dr. J. G. Rutherford, of Ottawa, Canada, and as Secretary, Dr. M. H. Reynolds, of St. Paul, Minnesota.

Owing to the death of Dr. Leonard Pearson, and the inability to act of Mr. Louis Swift, the President appointed in the stead of these two gentlemen, respectively, Dr. M. P. Ravenel, of Madison, Wisconsin, and Mr. T. W. Tomlinson, of Denver, Colorado. Later at the request of the Commission the President appointed Mr. J. J. Ferguson, of Chicago, Ill., as a representative of the United States Packing Industry, and Dr. J. N. Hurty, of Indianapolis, Indiana, as representative of the Medical Health Officers of the United States.

REPORT OF THE INTERNATIONAL COMMISSION ON THE CONTROL OF BOVINE TUBERCULOSIS.

To the President of the American Veterinary Medical Association:

Owing to the great economic and sanitary significance of animal tuberculosis to the live stock industry of America, and the many and varied factors which must of necessity be accounted with in formulating successful measures for its eradication, the American Veterinary Medical Association, at its meeting in Chicago in September, 1909, appointed the International Commission on the

Control of Bovine Tuberculosis. The Commission was instructed to study the problem of tuberculosis among cattle and to report at the next meeting of the Association upon reasonable and economically practical methods or systems to be recommended to both officials and live stock owners for eradicating this great scourge of domesticated animals.

It is recognized that tuberculosis is widely prevalent among cattle and other animals and that the frequency with which this great evil occurs is increasing rather than declining. As tuberculosis is one of the strictly preventable infections, there is good ground for the belief that through the formulation and enforcement of proper regulations the disease may eventually be entirely suppressed.

The Commission has held four meetings as follows:—Buffalo, New York, December 13 and 14, 1909; Detroit, Michigan, March 1 and 2, 1910; Ottawa, Canada, May 19, 20 and 21, 1910; Madison, Wisconsin, June 27 and 28, 1910; all of which were well attended, very few of the members having on any occasion been absent. The Commission begs to present as a result of its labors the following report which, although brief, will, on examination, be found to comprise the principal points essential to the promulgation of a comprehensive and practical policy, such as may reasonably be adopted by any governmental body interested in the control of bovine tuberculosis.

It is quite unnecessary in view of the extensive knowledge already possessed by all who are familiar with the efforts which have hitherto been made to secure control of bovine tuberculosis, to dwell at any length upon the importance of the subject or upon the conditions which led to the formation of the Commission.

In view of the personnel of the Commission as selected by the American Veterinary Medical Association, and of the fact that so much information on the subject has been made available through the work of similar bodies in other countries, and the researches of scientific and practical men in America and elsewhere, the Commission has not deemed it necessary to take any evidence either from expert witnesses or others.

The members fully understood that the purpose which their appointment was intended to serve was less the acquisition of new knowledge regarding bovine tuberculosis, than the careful study of the knowledge already available, and of the thoughts and opinions of those most entitled to speak with authority on the subject.

The conclusions reached in this report are, therefore, simply the outcome of an earnest and thoughtful consideration of the various modern aspects and phases of the problem, with the object of crystallizing public opinion and so clearing the way for legislative action.

They realized also that they could deal with the fundamental principles only, and that the details of any policy which they might outline, must in each case, be worked out by the duly authorized and responsible representatives of the community immediately concerned.

They nevertheless deemed it essential to study closely the history of the various efforts hitherto made by such countries throughout the world as have attempted to legislate on the subject.

This naturally led to the gradual elimination of all methods other than such as might reasonably be adopted by any community desiring, in the full light of present day knowledge, to undertake the control of bovine tuberculosis.

It was felt, in view of the prevalence of the disease, especially in some localities and among certain classes of cattle, the difficulty of providing a sufficient number of trained officials and the large economic questions involved, to say nothing of the enormous expenditure, that it would be unwise for the present at least, to seriously discuss a policy of universal compulsory testing and slaughter.

Such a policy might perhaps be adopted with advantage by a small community, or one in which the disease existed to a very limited extent, but speaking generally, especially in view of past experiences in this line, it was thought better to omit it entirely from the recommendations of the Commission.

All other methods of dealing with bovine tuberculosis which have been recommended or tried in various communities, were thoroughly discussed, with the object of discarding weak points and adopting such features as might be deemed worthy of a place in the official findings of the Commission.

Every phase of the subject was in this way fully and freely considered, it being thought best to cover the whole ground as completely as possible before coming to a definite decision on any one point.

In order to still further minimize the risk of omitting from the deliberations of the Commission any phase of the question, four committees were appointed at the first meeting to deal respectively with :—

(1) Education and legislation,
(2) Location of tuberculosis,
(3) Dissemination,
(4) Disposition of tuberculous animals.

The appointment of these committees proved to be of the greatest possible value in concentrating the energies of the various members on those branches of the subject with which they were most familiar, and their reports presented at subsequent meetings enabled the Commission to reach satisfactory conclusions much more rapidly than would otherwise have been the case.

As a means of furnishing information as to the reasons for these conclusions and the manner in which they were reached, the Commission would recommend that the reports of the committees should be published as an appendix to this report.

The Commission recognizing after careful study that the tuberculin test is the fundamental factor in any policy having for its object the control of bovine tuberculosis, decided that a pronouncement to that effect should properly occupy a foremost place.

Based on the information contained in the reports of its Committees and on such other information as was brought out in the general discussions of the Commission, the following resolutions were adopted for presentation to the American Veterinary Medical Association.

RESOLUTION 1. DISSEMINATION.

As a general policy to be observed all contact between tuberculous and healthy cattle and between healthy cattle and stables, cars, etc., which may contain living tubercle bacilli should be prevented. To accomplish this the following specific recommendations are made :—

1. There should be no sale or exchange of animals affected with tuberculosis except for immediate slaughter or for breeding purposes under official supervision.
2. That the managements of live stock shows should give preference to cattle known to be free from tuberculosis, either by providing special classes for such cattle or in some other practical way, and should also take every precaution to prevent contact between such animals and those not known to be free from disease.
3. All live stock shippers should take every precaution to see that cars furnished are thoroughly cleansed and disinfected before use.

RESOLUTION 2. TUBERCULIN TEST.

1. That tuberculin, properly used, is an accurate and reliable diagnostic agent for the detection of active tuberculosis.
2. That tuberculin may not produce a reaction under the following conditions :—
   (a) When the disease is in a period of incubation.
   (b) When the progress of the disease is arrested.
   (c) When the disease is extensively generalized.

The last condition is relatively rare and may usually be detected by physical examination.

3. On account of the period of incubation and the fact that arrested cases may sooner or later become active, all exposed animals should be retested at intervals of six months to one year.
4. That the tuberculin test should not be applied to any animal having a temperature higher than normal.
5. That any animal having given one distnct reaction to tuberculin should thereafter be regarded as tuberculous.
6. That the subcutaneous injection of tuberculin is the only method of using tuberculin for the detection of tuberculosis in cattle which can be recommended at the present time.
7. That tuberculin has no injurious effect on healthy cattle.

RESOLUTION 3. EVIDENCE FROM TUBERCULIN TEST.

That a positive reaction to tuberculin in any properly conducted test, official or otherwise, in any animal in any herd, shall be considered evidence sufficient to declare the herd to be infected.

RESOLUTION 4. COMPULSORY NOTIFICATION.

That the Commission recommends the passage of legislation providing for the compulsory notification by owners and by veterianrians of the existence of tuberculosis in a herd, whether such existence be made known by detection of clinical cases or by the tuberculin test.

RESOLUTION 5. LOCATION THROUGH SLAUGHTER.

This Commission recognizes that the discovery of tuberculosis in animals slaughtered for food purposes furnishes one of the best possible means of locating the disease on the farm, and therefore recommends the adoption of some system of marking, for purposes of identification, all cattle three years old or over, shipped for slaughter.

As tuberculosis of hogs in almost invariably due to bovine infection, this recommendation should also be made to apply to hogs of any age shipped for slaughter.

It is further recommended that the discovery of tuberculosis in animals coming under government inspection should be used whenever identification is possible, as a means of locating infected nerds and premises. All such cases should be reported to the proper authorities for control action.

RESOLUTION 6. DISPOSITION OF TUBERCULOUS ANIMALS.
THE COMMISSION PLAN.

1. As a general policy in the eradication of tuberculosis the separation of healthy and diseased animals, and the construction of a healthy herd are recommended.

In order to accomplish this, the following recommendations are made:—

(1) If the herd is found to be extensively infected, as shown by the tuberculin test or clinical examination, even the apparently healthy animals in it should be regarded with suspicion, until they have been separated from the reacting animals for at least three months.

If after the expiration of this time they do not react to the tuberculin test, they may be considered healthy and dealt with accordingly.

It is recommended that a herd extensively infected should not be treated by the method of general separation, but that the construction of a new herd from the offspring only is advisable.

(2) If the herd is found, by either or both of the above methols, to contain a relatively small proportion of diseased animals separation of the diseased animals from the healthy animals, and the construction of a sound herd from the healthy animals, and the offspring of both, is advocated.

As a working basis in carrying out these principles, we advise,

(a) That herds containing fifty per cent or more of diseased animals be treated as coming under section one.

(b) That herds containing under fifteen per cent of diseased animals be treated as coming under section two.

(c) That herds falling between these figures be graded according to the option of the owner.

(d) That it shall be the prerogative of the owner to reject either plan and have his herd dealt with by removal and slaughter of diseased animals, with or without compensation, according to the public policy in orperation.

2. That when by any means the officials properly charged with the control of tuberculosis become aware of its existence in a herd to which a policy of slaughter and compensation cannot reasonably be applied, such herd must be dealt with by the owner, under government supervision, on the principle of the separation of all sound animals from those affected. Such separation must be effected by treating the whole herd as diseased, and rearing the calves separately, either on pasteurized milk or the milk of healthy cows, or when the number of those affected is so small as to warrant such a course, by the application to the whole herd, from time to time, under official supervision, of the tuberculin test, and the entire segregation of all animals found to react.

In the event of any owner refusing or neglecting to adopt either of the above methods, his entire herd to be closely quarantined, and sales therefrom to be entirely prohibited.

3. That a policy of compensation be recommended as useful and usually necessary as a temporary measure.

4. That, when slaughter is necessary, in order to avoid economic loss, every effort should be made to utilize as far as possible the meat of such animals as may be found fit for food on being slaughtered under competent inspection.

5. The details of the Commission Plan will be found fully set forth in the Appendix to this report.

RESOLUTION 7. PREVENTION.

1. That, with the object of preventing the spread of infection, persons buying cattle for breeding purposes or milk production should, except when such purchases are made from disease free herds which have been tested by a properly qualified person, purchase only subject to the tuberculin test. In order to assist in the proper carrying out of this suggestion, the Commission recommends that official authorities should adopt such Regulations as will prevent the entry to their respective territories of cattle for breeding purposes or milk production unless accompanied by satisfactory tuberculin test charts.

2. That all milk and milk by-products used as food should be properly pasteurized unless from cows known to be free from tuberculosis.

RESOLUTION 8. CONTROL OF TUBERCULIN TEST.

That this Commission recommends the passage of legislation which will prevent the sale, distribution or use of tuberculin by any persons other than those acting with the full knowledge, or under the direction, of official authorities.

RESOLUTION 9. EDUCATION.

As a clear knowledge of the cause and character of tuberculosis among animals, the modes of dissemination, its significance as an economic and as a public health problem, underlie an intelligent adherence to the principles that must be observed in all efforts for eradication, as well as the establishment of proper cooperation in the great work between physicians, veterinarians, live stock owners, legislators, and the public generally, it is recommended that a widespread campaign of education be undertaken. To accomplish this end it is recommended that first of all a simple pamphlet on bovine tuberculosis be written, in which the language used shall be of such character that every person of average intelligence shall be able to read it without being mystified by technical terms or phrases. This pamphlet should be published with the endorsement of the American Veterinary Medical Association and the special endorsement and consequent authority of the International Commission on Bovine Tuberculosis Control.

RESOLUTION 10. PUBLICITY.

In concluding its work the Commission desires to especially appeal to the press, metropolitan, agricultural and local to join in the work of extending as much as possible among the people the conclusions here arrived at. The vital importance of the life of farm animals to the welfare of all classes of society needs no argument in its support. The aim and sole purpose which has actuated this Commission has been to arrive at the soundest conclusions possible in the light of the best knowledge obtainable.

RESOLUTION 11. LEGISLATION.

It is recommended that legislation regarding the control and eradication of tuberculosis among domestic animals be made uniform; that the laws of the United States and Canada and other American countries for the admission into America of animals from without be made stringent and as much alike as possible; and that the laws governing the interstate and inter-provincial movement of cattle and that between different American countries be harmonized.

The laws governing inter-state and inter-provincial movement of cattle should be of such character that every state and every province will be free in its eradication work from unnecessary difficulties due to the existence of the disease in other states and provinces.

Legislation is especially required to prevent the various frauds which interfere with the satisfactory use of tuberculin as a diagnostic agent for tuberculosis, as well as for official supervision over all tuberculin sold to be used by veterinarians and others.

RESOLUTION 12. SANITATION.

In the eradication of tuberculosis it should be kept in mind that, in addition to protecting animals against exposure to tubercle bacilli, it is desirable to make them as resistant to infection as possible. This can be done by stabling them in clean disinfected and properly ventilated and lighted barns, giving them abundant clean water and nutritious food, a sufficient amount of daily exercise in the open air, and attending generally to those conditions which are well known to contribute to the health of animals.

The daily removal of manure from stables, and water tight floors and good drainage in stables are urgently recommended.

Young stock particularly should be raised as hardy as possible and should be accustomed to liberal exercise and living in the open.

RESOLUTION 13. IMMUNIZATION.

That as none of the various methods for the immunization of animals against tuberculosis have passed sufficiently beyond the experimental stage the Commission is unable to endorse any part of these for practical use at the present time.

RESOLUTION 14. ANIMAL TUBERCULOSIS AND PUBLIC HEALTH.

While the members recognize that the subject with which this Commission is primarily intended to deal is the control and eradication of tuberculosis among animals as an economic problem they cannot feel satisfied without declaring their recognition of the fact that tuberculosis among animals is also an important public health problem. Considered as such, the eradication of tuberculosis among animals should have the approval and support of all those persons who are interested in curtailing human suffering and prolonging human life.

RESOLUTION 15. GENERAL STATEMENT.

The members of the Commission wish to be clearly understood that they recognize the limitations of a report necessarily based on actual and not on theoretical conditions. They fully realize that in the event of the policy of which their recommendations form the frame work, being anywhere adopted even in its entirety, much greater benefit will be derived, at least for some time, from its educative than from its executive features.

The control to say nothing of the eradication of bovine tubersulosis, is impossible of achievement, without the hearty cooperation of all the men who are actually engaged in the cattle industry. In order to secure this cooperation, it will doubtless be necessary, in most communities, to carry on an active and prolonged educational campaign.

It is apparent that in the dissemination of practical and reliable information regarding the disease, it will be possible to employ a very large variety of methods. Many of these methods, such as bulletins, lectures and actual demonstrations of disease, having already been found valuable, will doubtless continue to be largely used.

It must not be forgotten however, that in this, as in any other educative process, a measure of disciplinary control is essential to success.

Needless to say such control can be secured only by the passage of legislation which, while clear and comprehensive must, at the same time, be sufficiently conservative to avoid exciting alarm or arousing antagonism on the part of owners especially of valuable herds.

The best law ever framed can be made an utter failure by stupid or injudicious administration, while, on the other hand, the most drastic legislation can be rendered acceptable if enforced with reasonable tact and diplomacy.

Provided therefore, that these qualities, combined with integrity, thoroughness, and determination, are available for administrative purposes, the members of the Commission are convinced that the enforcement of a law based on their recommendations, will prove to be by far the most powerful and effective educational agency which could possibly be employed.

In concluding its Report the Commission would suggest that the Association should make such provision as may be necessary to carry on the work either by continuing the Commission as at present constituted or with such changes in the personnel as may be considered desirable.

(Signed)

Wm. C. Edwards, J. N. Hurty,
E. C. Schroeder, J. J. Ferguson,
J. R. Mohler, T. W. Tomlinson,
J. W. Flavelle, V. A. Moore,
F. Torrance, W. D. Hoard,
Mazyck P. Ravenel, *M. D.*
Chas. A. Hodgetts, *M. D.*
J. G. Rutherford, *Chairman.*
M. H. Reynolds, *Secretary.*

SECOND REPOR

OF THE

Department of Agricu

OF THE

State of Washingto

TO THE

GOVERNOR

July 1, 1914, to June 30, 1916

"The productiveness of the earth must increa
er on to generation, this also is his obligation."

OLYMPIA, WASH.
FRANK M. LAMBORN PUBLIC PRINTER
1916

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FRANK M. LAMBORN PUBLIC PRINTER
1916

LETTER OF TRANSMITTAL.

STATE OF WASHINGTON,
DEPARTMENT OF AGRICULTURE.

OLYMPIA, June 30, 1916.

To His Excellency, Ernest Lister, Governor of the State of Washington:

SIR: In compliance with law, I have the honor to submit herewith the Second Report of the Department of Agriculture, covering the period from July 1, 1914, to June 30, 1916, inclusive.

Your attention is respectfully directed to the valuable service rendered the Department by Dr. Ira D. Cardiff, Honorable E. E. Flood, and Dr. Granville Lowther, members of the Advisory Board, who have all assisted your Commissioner to the fullest possible extent in meeting the many perplexing problems with which we have been confronted from time to time.

This service, which has been had at practically no expense to the taxpayers of the state, has been of inestimable value and is gratefully appreciated.

Respectfully submitted,
H. T. GRAVES,
Acting Commissioner of Agriculture.

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ORGANIZATION OF

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Dr. Granville Lowther, North Yakima,
Dr. Ira D. Cardiff, Pullman, Wash.
Dr. H. T. Graves, Acting Commissione

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I. R. Fletcher, Camas, Wash.
O. T. Clawson, Wenatchee, Wash.

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*Deceased, Feb. 20, 1916.

Food Inspectors.

Will H. Adams, Spokane, Wash.
Mrs. W. H. Coffin, Tacoma, Wash.
I. J. Minnick,* Spokane, Wash.

Drug Inspector.

Edward L. Jones, Ph. G., Spokane, Wash.

Oil Inspectors.

S. P. Wilson, Chief Inspector, Seattle, Wash.
M. B. Laucks, Seattle, Wash.
Capt. John Gray, Spokane, Wash.

Office Force.

F. B. Fuller, Secretary, Olympia, Wash.
S. R. Holcomb, Weather Observer and Clerk, Olympia, Wash.
Miss Ruby Boucher, Stenographer, Olympia, Wash.
Miss Lillian Arens, Stenographer, Olympia, Wash.

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*Deceased, Feb. 20, 1916.

INTRODUCTION

ORGANIZATION OF DEPARTMENT.

Prior to the session of the State Legislature of 1913, the duties of the Department of Agriculture of the State of Washington, as at present constituted, were distributed among a number of independent departments. Each of these departments had its separate head and each performed its independent functions as defined by a number of state enactments. In some particulars several of these departments occupied more or less competitive fields. While each had assigned to it specific duties different from the others, nevertheless there were occasions when their activities to a greater or less extent were duplicated.

It was found that the operation of a great number of independent departments added to the expense of administration. Certain fixed charges were necessary in connection with each department, which, while not large perhaps with respect to any one, nevertheless in the aggregate added considerably to the expense of the taxpayers. This situation resulted not only in more or less confusion, but it was open to numerous other objections which the legislature in the year 1913 remedied upon the Governor's recommendation.

Naturally, also, there was a lack of co-operative effort and a tendency among the various departments to outdo each other in their respective fields, which created a situation obviously unsatisfactory when viewed from the standpoint of modern administrative methods.

Each of these various departments found it necessary at the recurring sessions of the legislature to make appeal for funds for the conduct of its work. A natural consequence of this condition was that some departments, the heads of which were more active or more successful in presenting their case to the appropriation committees, were able to secure larger appropriations than perhaps were necessary in the discharge of their duties, while others for a contrary reason were not sufficiently equipped to properly carry on their work.

One objection to the former system was found in the fact that the several departments were scattered about the state at different points. The locations of their respective headquarters were unknown to the large majority of citizens and hence it was a matter of difficulty for the people whom the state sought to serve to come into close and intimate contact with the agencies designed to serve them. These and other objections which from time to time manifested themselves resulted in a definite demand upon the State Legislature for a consolidation of a number of departments whose duties as defined by the state laws were to a great extent closely connected. This movement as above intimated climaxed in the year 1913 when the State Legislature adopted the act whereby the present Department of Agriculture of the State of Washington was created.

The department thus brought into existence is vested with all of the powers and is required to perform the duties previously appertaining to the following offices: The State Veterinarian, Dairy and Food Commissioner, Commissioner of Horticulture, State Oil Inspector, Bakery Inspector, State Fair Commission, and in the Washington State College, with respect to the licensing and registration of jacks and stallions, and with respect to the duties of the director of the Washington Agricultural Experiment Station as regards concentrated commercial feeding stuffs and commercial fertilizers used for manurial purposes.

Upon the consolidation of the above offices in the one department an investigation and close analysis of the duties required of them disclosed the fact as indicated above, that in several cases their activities were closely related. For convenience of administration, therefore, and for the purpose of securing added efficiency at the least possible expense, the work of the several offices was grouped around four general subdivisions, each having a deputy of the department at its head. These four divisions are known as, first, Dairy and Live Stock Division; second, Division of Horticulture; third, Division of Foods, Feeds, Fertilizers, Drugs, Oils and Bakery Inspection; fourth, the Division of Agriculture. Through the agency of these four divisions the many and important duties assigned to this department in the act of 1913 are performed. The general powers of the Commissioner authorize him to publish and to distribute bulletins dealing with the various phases of departmental activity and for the purpose of informing the public with regard to the work and results accomplished by the Department.

The Commissioner of Agriculture is the executive officer of the state for the enforcement of the regulatory laws relating to agriculture, and to the agricultural resources of the state. He is charged with the enforcement of numerous important police regulations having to do with the food supplies offered for sale to our citizens, to the drugs which they purchase, to the output of the bakeries scattered through the several hundred cities and towns of the commonwealth, and in many other ways the Department is intimately connected with the preservation of the health and well being of our people.

It is not contemplated in the act and it has not been the practice of the Department to enter the field already occupied by the state and government experimental stations. The problems of a more or less technical character touching upon the question of farm methods which are presented to the modern farmer who desires to get the best results from his operations belong to experts trained for that particular work. Such experts are maintained at the State College and the various experimental stations and to them are referred the matters which naturally would come under their consideration. It is a pleasure to state in this connection that the Department has at all times enjoyed the closest co-operation with the State College and the officials of the various experimental stations who have invariably responded promptly and satisfactorily to every request for assistance or information that has been referred to them.

PURPOSE OF INTRODUCTORY CHAPTER.

It will be apparent from the foregoing that the Department of Agriculture is assigned a wide scope of activity. Its duties as defined by statute are many and varied. Reaching out from the state capitol the ramifications of the Department touch the citizens directly in the most remote corners of the state. It is believed that every citizen has a personal interest in the work of this Department. He helps through the taxation of his property to pay for its support. He has an interest in the success of its work from the standpoint of the preservation of the public health. He has a large interest in the work the Department is required to do in the inspection of the food products which are consumed on his table, and it is not stretching the facts by any means to assert that the comfort and well-being, and in many cases the lives of our citizens are dependent upon the proper discharge of the duties assigned by the Legislature to this Department.

The varied activities required of the Department suggest also in some measure the character and extent of the state's resources and industries. Realizing that this report will go to many who are not familiar with the natural conditions and the development that has taken place in this state, it has been deemed wise to present in connection with this report a brief statement descriptive of the climate, the soil, the products and industries of Washington, and of the people who are engaged in developing its manifold resources.

The purpose in view is to connect up for the benefit of the reader the duties required of this Department with the field in which those duties are performed. It is believed, for example, that the work of the Division of Dairying and Livestock will be better understood and more fully appreciated if some detailed insight is presented with respect to the extent and scope of the dairy and livestock industry.

A great many of the states of the Union maintain a regular department of horticulture. But how many of them can boast a single county with sixty thousand acres of commercial orchards annually contributing their products to the world's markets? The work of the seed inspector is common to nearly every state, but the importance of that work as related to our own commonwealth will appeal more strongly to the reader who is conversant with the acreage, the capital, and the labor employed in the great grain-growing industry of Washington. The following pages, therefore, will offer to the reader in as concise a form as possible such facts and figures as will enable him to visualize the field of activity in which the State Department of Agriculture is engaged.

The information presented has been secured from official and other reliable sources and will be found readily capable of verification.

NATURAL DIVISIONS OF THE STATE.

The State of Washington, by reason of several outstanding topographical features, is naturally divided into districts possessing widely varying characteristics. Not far distant from the Pacific Coast is the Olympic range of mountains which gives the name to and forms the dominant physical characteristic of the great district known as the Olympic Peninsula. Farther east the Cascade Mountains extend in a general northern and southern direction, forming what may be termed the backbone of Washington, dividing the state into regions vastly dissimilar in climate, soil, and other natural conditions. The Columbia River, a third important boundary line, enters the state in its northeast section and traverses its entire width in an irregular course, entering the Pacific Ocean at the extreme southwest corner. Based upon these natural lines of division, the state may be subdivided into the following sections:

First, the district located between the Pacific Ocean and the Olympic Mountains. Second, the great natural basin which lies between the Olympic and Cascade ranges. The chief physical feature of this district is the inland sea known as Puget Sound. Third, the Cascade Mountain range with its peaks surmounted by a perpetual covering of snow, forming the source of many of the streams which water the fertile valleys both in Eastern and Western Washington. Fourth, the territory north of the Columbia River, an extensive rolling country partly timbered, which has been given the name of the Okanogan Highlands. Fifth, the Columbia Plains lying south of the above district and east of the Cascade Mountain Range. Sixth, the Blue Mountain district which is located in the extreme southeastern section of the state. Seventh, a series of wide hills and valleys originally heavily timbered, located in the southwest section.

As may be expected from the widely different topographical conditions suggested by the foregoing, the industries and resources of the state are many and varied. These will be treated in turn in subsequent pages.

SOILS OF DIFFERENT SECTIONS OF THE STATE.

The Cascade Mountain range, by far the most important of Washington's dividing boundaries, separates the state into two great sections commonly known as Eastern and Western Washington. The soils of these two sections are of differing origin and likewise different in character and composition and with respect to the purposes for which they are best adapted. Generally speaking, the soils of Western Washington are of glacial origin, while the soils of Eastern Washington had their basis in the outflow of enormous volcanoes which had their period of activity in bygone ages.

Western Washington.

Sand, clay and gravels are the characteristic features of the soil which covers the mountains and foothills of Western Washington. In some places these deposits remain today much as they were left as the result of the original glacial movement. In the valleys, however, where the rocks have disintegrated and become pulverized by the passage of time and the processes of nature, aided by the continued deposit of silts from the rapid flowing mountain streams, and mixed with accumulations of decaying vegetation, a soil formation is presented which has proven extremely attractive to the farmer and truck gardener. At the mouth of several of the Western Washington streams where topographical conditions are favorable, a mixed soil made up of silt deposits combined with decayed organic matter has accumulated, and through actual demonstration has been found to yield remarkably of all manner of grain, grass and vegetable crops.

In some sections of Western Washington where lakes and marshes formerly covered the ground, now will be found a peat soil which under certain conditions has been found to yield profitable crops.

Soils of Eastern Washington.

As already noted, the characteristic feature of the soil of Eastern Washington is its volcanic origin. Great stretches of country lying eastward from the Cascade Mountain range are covered to a vast depth with what is commonly termed volcanic ash. Like the soils of Western Washington, the original conditions have been greatly altered through the passing of the centuries. Heavy silt deposits in many places, the disintegration of igneous rocks, and the decay of vegetable matter have all combined to add richness and fertility to these soils.

On the highlands and in the northern section of Eastern Washington, there has always been sufficient rainfall to produce abundant native forage crops, which in the early days of the state's development offered tempting fields to stock men. The opportunties thus presented were early seized and improved to the utmost. In the lower levels and river valleys of Eastern Washington, where the rainfall is insufficient for practical farming purposes, vast stretches of the original volcanic ash presented themselves to the early settlers of the state, an unbroken sagebrush plain. This soil occurs in depths varying from two to three feet to as much as seventy-five feet. In its natural condition it offers a parched and forbidding aspect to the observer, but when the life-giving streams from the mountains are turned upon its barren surface this soil has been found so productive as to be the marvel of all who are familiar with its possibilities.

There are evidences also in many sections of Eastern Washington of vast areas which formerly must have been great inland lakes. The subsiding waters, together with the changing courses of the streams which flow through these districts, leaving their rich silt deposits to cover the land, have given to the farmers and fruit-growers of the state a legacy of almost incalculable value.

The foregoing treats of the soil conditions of the state only in a general way. Localities will be found both in Eastern and Western Washington where the conditions above described do not apply, but for the purposes of this report, the limitations of which forbid entering greatly into detail, what has been said will probably be sufficient.

CLIMATIC DIFFERENCES AND RELATION OF SAME TO INDUSTRIES.

It has been observed that the Cascade range of mountains divides the state into two sections possessing very different characteristics. Just as we find that the soils of Eastern Washington are different in origin and adaptability from the soils of Western Washington, so we find a marked difference in the climatic conditions of the two regions.

Western Washington.

The characteristic climatic features of Western Washington are its heavy annual rainfall and its equable average temperature, which is influenced to a large extent by reason of close proximity to the warm currents of the Pacific Ocean.

Originally this portion of the state extending from the Canadian border on the north to the mouth of the Columbia River on the south, was one great evergreen forest interrupted only by the various indentations of the ocean which penetrate deeply into the state, and by the numerous streams which flow from the snowclad tops of the mountains to the sea. The gigantic firs and cedars standing in solid array over uncounted miles of territory were the product in large measure of the copious rains which fall in this section during a large portion of the year. The precipitation, however, varies largely in different parts of the western section of the state. The moisture-laden winds from the Pacific Ocean find natural avenues of access to the interior through the mountains and by way of the courses of the various streams. The districts which are directly in line with the course of the prevailing winds naturally receive the greater amount of precipitation. There are a number of isolated sections so located with reference to the mountains and the wind currents that their annual precipitation is only slightly greater than is found in the semi-arid sections of Eastern Washington. In such sections it has been found profitable to construct systems of artificial irrigation to enable the farmers to mature their crops. Other districts not many miles away may have a rainfall annually of from fifty to sixty inches or more.

Some idea of the annual rainfall in different sections of Western Washington may be gained from tables of observations as taken by the agents of the U. S. Weather Bureau. The following figures represent averages of annual precipitation for the counties named covering a period of ten years or more: Grays Harbor County, 88.55 inches; station, Aberdeen. King County, 47.81 inches; stations, Seattle, Snoqualmie Falls, and Vashon Island. Kitsap County, 42.47 inches; station, Eagle Harbor. Mason County, 83.41 inches; station, Union City. Pierce County, 58.22 inches; stations, Tacoma and Ashford. Thurston County, 53.86 inches; stations, Grand Mound and Olympia. Whatcom County, 37.47 inches; stations, Bellingham and Blaine.

In general, the climate of Western Washington is mild and equable. Extremes of temperature are rarely experienced. The summers, owing to the refreshing ocean breezes, are delightful and Western Washington with its numerous salt water bays and inlets, its beautiful lakes and mountains within easy access by rail or motor car, is fast achieving national fame as a great summer playground.

As the forests have receded before the attacks of the loggers the lands thus denuded of their timber are rapidly being converted into comfortable farm habitations. The climatic conditions naturally exercise an important influence upon the varieties of crops produced. These will be referred to in detail elsewhere in this report.

Eastern Washington.

Varying conditions of climate are found in Eastern Washington, governed in a large measure by the differing altitudes of the various sections. The outstanding climatic characteristics of the entire region are long, hot summers and moderately cold winters, with an annual rain precipitation varying from almost nothing to a sufficient fall to insure regular annual crops of wheat and other products far above the average, both in quality and quantity. In the higher levels in the north-central and the southeastern portions of the district, farming without irrigation is practiced upon an extensive and ever-increasing scale. In the semi-arid portions of Central Washington, where the annual rainfall amounts only to a very few inches, irrigation is essential to successful farming and the production of crops by this method has been in progress for the last fifty years.

The Cascade Mountain range is the dominating factor in determining the climate of Eastern Washington. These rugged mountains stand as a barrier to the moisture carrying winds from the ocean, seizing their burden and precipitating it upon their own rocky slopes, either in the form of rain or snow. It is in consequence of this condition that so large a portion of Eastern Washington must remain unproductive until it is reclaimed through the construction of artificial systems of irrigation. At times in Eastern Washington extremes of heat and cold are experienced. But the low humidity prevents any disagreeable consequences from the high temperatures experienced in the summer, and the nights, even in the hottest months, almost invariably yield a refreshing coolness. Sufficient snowfall is common during the winter months to make sleighing an enjoyable recreation for periods ranging from two weeks to two months.

The following figures taken from the weather bureau reports indicate the average annual rainfall in the respective counties covering observations through a period of ten years or more: Adams County, 11.90 inches; station, Lind. Asotin County, 16.11 inches; station, Zindel. Chelan County, 14.8 inches; stations, Lakeside and Wenatchee. Spokane County, 18.23 inches; station, Spokane. Walla Walla County, 17.58 inches; station, Walla Walla. Whitman County, 22.20 inches; stations, Colfax, Pullman, Rosalia. Yakima County, 9.35 inches; stations, North Yakima, Sunnyside, Fort Simcoe.

It should be noted that the precipitation of snow is not included in the foregoing statistics.

AGRICULTURE.

Agriculture has been described as the basis of all industry. Certainly in the absence of men to till the soil and force the earth to yield of her bounty, humanity would have but short life upon this earth. As in other newly settled countries, the early comers to the State of Washington sought almost immediately to ascertain the adaptability of the soil and climate in this state to the production of the staple food products necessary to human sustenance. Fortunately for them and for those of us who have come after, their experiments and the experience of succeeding generations in the same line of effort, have proven eminently satisfactory and successful. Speaking in a broad sense, agriculture includes all of the various industries which have their basis in the tillage of the soil. Horticulture, stock growing, poultry raising, bee keeping, etc., are all phases of agriculture. This chapter, however, will be confined to a consideration of the resources and development of this state with reference to grains, grasses, roots, and similar crops, leaving the treatment of these other subjects for further subdivisions of this report.

CEREALS.

Wheat.

The annual production of wheat in the State of Washington ranges from thirty million to forty million bushels. While there are a number of states that surpass our own in total quantity of production, Washington has for years maintained the lead of all the states in the Union for the highest average yield of wheat per year per acre.

Those portions of Eastern Washington which enjoy a rainfall sufficient for the maturing of crops have long been noted for their large yields of this cereal. Lands on the plains of this portion of the state, which in early years were unable to find a purchaser at 50 cents or $1.00 per acre, quickly took on a twenty-fold value when experimental work had demonstrated their fitness for producing wheat. In the country south of the big bend of the Columbia River a great wheat-growing industry has been in process of development for many years. Likewise, in the rich Palouse and Walla Walla countries wheat growing has been a source of prosperity to the people almost since the date of the early settlements. It is not uncommon in these latter sections of the state to see the farmers plowing around the knolls and hills which are characteristic of the country, until the very summits are made ready for the reception of their seed.

As has been previously noted, the soil of this region is of volcanic origin. Repeated cropping and cultivation apparently has had small effect upon the producing capacity of this soil. Under the influence of continued plowing and harrowing and moistened by the rains and snows, it becomes more compact and furnishes annually a better seed bed and presents greater resistance to moisture evaporation. Somewhat removed from the lands which are capable of yielding an annual crop are others where the farmers can count upon a fair yield only once in a period of years. The introduction, however, of improved dry farming methods upon these lands is having the effect of converting them from idle sagebrush wastes into productive profit yielding farms.

The wheat grown in the districts thus far referred to is ordinarily of a high milling grade. It finds ready market in the flour mills of Washington and Oregon, and the surplus is annually absorbed through transportation by ocean to the world's great wheat markets.

In recent years wheat production on a considerable scale has been practiced in some of the irrigated sections of the state. Under favorable conditions, yields of wheat on irrigated land exceed sixty bushels to the acre. The wheat thus grown, however, is not usually regarded as best suited for milling purposes, but finds a ready market as feed for stock and poultry. Some soft wheat, utilized for like purposes, is also grown on the flat alluvial lands of the river deltas of Puget Sound. Records of one hundred bushels to the acre of wheat grown in these latter localities are not uncommon.

Wheat growing has proven one of the most staple and profitable of all the industries of Washington. Prices have ranged uniformly high in recent years, and a prosperous and contented population is characteristic of all the important wheat growing sections of the state.

The principal varieties of wheat grown are Bluestem, Club, and Forty Fold.

The leading wheat producing counties of Washington are Whitman, Lincoln, Adams, Walla Walla, Douglas, Yakima, Spokane, Asotin, Columbia, Garfield, Klickitat, Kittitas, and Franklin.

Oats.

This important cereal, while not grown to the extent that wheat is raised, nevertheless, is an important contributor to the sum total of the output of Washington farms. Oats are produced more extensively in Western Washington than in Eastern Washington. A great industry in the production of oats for human food purposes has been developed on the broad alluvial flats near the mouths of the Skagit and other Western Washington streams. The peculiar conditions of soil and climate in these localities seem to combine to produce all of the essentials for first class milling oats. The consumption of this cereal for the purpose of manufacture into breakfast foods has grown immensely in recent years. The objection that is raised against wheat grown in districts subjected to a heavy rainfall do not apply as related to oats grown under similar conditions. While soft wheat is not best adapted to the production of first class flour, oats that are grown in the humid sections of the state have been found exceptionally well adapted to rolling and for manufacture into various forms of table food. The lands above referred to frequently average one hundred bushels of marketable oats to the acre.

It should not be understood that the growing of oats is disregarded by the progressive farmers of Eastern Washington. The necessity of a plentiful supply of this cereal which still retains the premier position as an ideal ration for horses necessitates the production of oats in Eastern Washington upon a considerable scale. The advantage, also, rests with the farmers in this latter part of the state by reason of the fact that the preparation of the virgin soil for the reception of seed is comparatively an inexpensive process. In Western Washington the item of land clearing is laborious and costly. Logged-off lands must be prepared for crop purposes by the removal of the stumps left by the loggers, either by blasting or through a tedious process of burning them out.

Under the most favorable conditions this is an expensive undertaking. The cost of clearing an acre of land will run from fifty dollars to one hundred dollars, depending upon the size and number of stumps to be removed. It is a matter often of years of continued labor and expensive outlay to place a tract of land in fit condition to produce any kind of crop.

In Eastern Washington an entirely different condition prevails. Where the land originally was covered with a growth of bunch grass, the sod needs only to be deeply turned to convert the field into a receptive seed bed. In those sections where the original vegetation was confined to a growth of sagebrush, the process is a little more laborious and slightly more expensive. The sagebrush must be broken down, dragged into piles and burned, before the plow can be applied. But the total cost of this operation often will not exceed $2.50 per acre, and a quarter section of land can be cleared and made ready for the plow in a very brief time.

In the districts of Eastern Washington where farming under irrigation is practiced large areas of land which are unsuited to orchard purposes are being utilized for the production of oats. It has likewise been found that large areas of sub-irrigated lands, that is, lands which receive moisture through drainage from lands developed under regular systems of irrigation, will often produce large and profitable crops of oats.

On the irrigated lands where sufficient water supply is readily available, the yield of oats will equal that obtained upon the Western Washington flats. In keeping with other cereals, the price of oats has been maintained at a high level for a number of years and the farmer who comes to harvest time with a good average crop of this cereal is assured a ready market and a profitable price for his products.

Corn.

Until recent years, corn has not been regarded as a profitable crop in this state. The uniformly cool nights which prevail throughout Wastern Washington during the growing season are a bar to successful corn culture on anything approaching the scale maintained in the eastern and central corn belt. Sweet corn, for table use, is grown quite generally by market gardeners in the vicinity of all of the cities of the West Side, and both with respect to quality and acreage yield, it is a satisfactory crop. Field corn for silage purposes is grown to some extent, but generally speaking, the production of corn for commercial purposes is not attempted on any considerable scale in Western Washington.

In the warm irrigated valleys of Eastern Washington, considerable areas are now planted annually to this grain. The nights in these sections are warmer and the long hot days of summer, coupled with the advantage of a plentiful water supply, always under control, surround the grower with conditions that insure a most bountiful yield. The earlier experiments were not altogether satisfactory, even in the highly favored irrigated districts. But it was soon discovered that through proper care in seed selection, and particularly through the development of an acclimated variety, results could be obtained approximating the best yields in Iowa and Illinois.

In the Yakima Valley where corn is grown at present on a considerable scale, 20 tons to the acre when cut for silage, and 60 to 75 bushels to the acre when the grain is allowed to go to harvest are not uncommon. From the above named section, where the most successful results in corn culture have been achieved the practice of devoting a portion of the farm area to corn is rapidly spreading through all of the irrigated districts of Eastern Washington.

Coincident with the production of corn, there has come a great impetus to the dairy and hog-raising industries and throughout the more developed sections of Eastern Washington a modern silo is coming to be regarded as an essential feature of the farm equipment.

For the encouragement of the farmers in devoting more time and attention to the production of this cereal the custom has grown up in the past few years of holding annual corn shows in the fall at numerous localities in the irrigated belt. At these shows the corn growers exhibit the best specimens from their respective fields and compare notes as to the most desirable varieties to plant under the conditions of soil and climate that prevail in their several sections. Three of such shows were held in the Yakima Valley alone during the season of 1915 and the exhibits offered for public inspection were pronounced by experts to be worthy in every particular of comparison with the products of the most famous corn belts of the middle states.

Barley.

In the extreme southeastern section of the state, more particularly in Garfield, Columbia, and Walla Walla counties, the production of barley in recent years has assumed important proportions. Tests made by the farmers in this section have demonstrated in many cases that barley is a more profitable crop for them than wheat. This grain is equal in value for feeding purposes to corn and is rapidly growing in favor with stock growers, particularly in Eastern Washington where the source of supply is reasonably close at hand. Other sections of Eastern Washington, and to some extent in Western Washington, are likewise capable of producing profitable crops of barley. On the west side some barley is raised, chiefly designed for feeding poultry and hogs.

Prior to the enactment of legislation in this state whereby the manufacture of malt and spirituous liquors were entirely prohibited within its borders, the breweries consumed a large portion of the barley crop of Eastern Washington. The loss of this market, however, does not appear to have made any substantial difference in the area of land devoted to barley production, as there appears to be a demand for all the barley that our farmers produce.

Peas.

Conditions in Western Washington in the valleys and lower foothills are admirably adapted to the production of peas. Eastern seed men long ago discovered that a superior quality of peas is grown in this section of Washington, and several of the large seed firms are finding their source of supply for peas in this state.

Experiments have been made on the irrigated lands of Eastern Washington in growing peas adapted for canning purposes. Such experiments, where proper care has been given the crops, have invariably proven successful. Where the sowings are made early in the spring two full crops on irrigated land are easily obtainable. Reports made to large eastern canneries which have furnished seed for experimental purposes, have led them to an investigation of the possibilities of establishing large pea canning factories in Central Washington.

Grasses.

The lands, both of Western and Eastern Washington, have been found well adapted to the growth of a wide variety of grasses suitable for forage and hay purposes. Western Washington is well entitled to be called "evergreen," not only on account of its boundless forests of fir, cedar, and spruce, but likewise for the abundant growth of grass crops which rapidly cover the logged-off lands when the timber men have completed their labors. Wild grasses flourish in this section equally with clover, bluegrass, and timothy, all of which are grown on a considerable scale. Weather conditions in Western Washington are more or less uncertain during the harvest season, and for that reason the major portion of the grass crops are consumed as pasture. The adaptability of the district to the production of these crops has greatly stimulated the dairy industry in Western Washington. Thousands of fine dairy cattle find their chief sustenance on the cut-over lands of the western portion of the state, which furnish bounteous pastures for a large portion of the year. This industry has grown to such proportions that the dairymen are not only able to supply the demands for fresh milk and cream for the cities of Seattle, Tacoma, Everett, Bellingham, and other large centers of population, but a sufficient surplus is produced to supply the demands of a multitude of creameries and of several large milk condensing plants.

The chief source of supply of the state for cured hay is found in the Kittitas and Yakima valleys of Eastern Washington. The first named section has long been famous for its splendid dairy herds and for the products of its creameries. This district annually produces a heavy tonnage of timothy, alfalfa, and mixed hay, the surplus product finding a ready market in the cities of Western Washington.

Farther down the Yakima Valley, notably in the lower portion of Yakima County, will be found vast fields devoted to the production of alfalfa. Three cuttings of this valuable forage crop are made annually with yields running from four to six tons per acre. In the more favored sections the fields are pastured after the third cutting, thus giving the owners an added source of revenue. On the Yakima Indian Reservation, where a large portion of the alfalfa crop of Yakima County is grown, thousands of heads of cattle are wintered annually, their principal ration consisting of alfalfa hay. That portion of the crop which is not sold to feeders or consumed upon the farms of the growers, finds a ready market among the dairymen of Western Washington who find it necessary to supplement their pasturage with liberal supplies of alfalfa. The prevailing price for alfalfa hay, baled and on the cars at point of shipment, ranges at about ten dollars per ton. First class timothy hay baled and on the cars averages the grower from fifteen to seventeen dollars per ton. The prices above given apply during years when normal conditions of supply and demand prevail. For 1915-16, an unusual situation has presented itself. The European war and the general tendency toward higher price levels of all farm products, have been factors in stimulating bidding for the Washington hay crop and the growers have enjoyed better returns than for several previous seasons.

Alfalfa is also a favorite cover crop with the fruit growers of practically all of the orchard districts of eastern Washington, and from this latter source a considerable annual tonnage is harvested.

In most cases alfalfa thus grown is utilized on the premises of the producer.

HORTICULTURE.

Horticulture is one of the several rapidly developing industries of Washington which have their origin in the tillage of the soil. The production and marketing of fruit upon a commercial scale has been carried on, comparatively speaking, for only a brief number of years. It is true that fruit has been grown in this state since the days of the earliest settlements and it is not a matter of difficulty to find in Washington small apple and cherry orchards considerably older than the state itself.

The entrance of the state into the field of commercial fruit production, however, may roughly be said to date from the time when irrigation began to be practiced upon a considerable scale. It is not to be assumed from this that all of the fruit produced in Washington is grown upon irrigated land. Both of the great divisions of the state commonly spoken of as Eastern and Western Washington, the boundary line between which is formed by the Cascade range of mountains, have been found adapted to fruit growing. In Eastern Washington the great bulk of the fruit lands are under irrigation. In Western Washington a different condition prevails. The lands in this latter section devoted to fruit are located for the most part in the fertile river valleys and on the islands of Puget Sound.

A distinction to be noted at this point is the difference in character of the fruit produced in the two grand divisions of the state. Generally speaking the fruit districts of Eastern Washington are given over largely to the production of orchard fruits, such as apples, pears, peaches, apricots, etc. Grapes are also successfully grown upon a considerable scale in this part of the state. Western Washington, while it boasts the production of excellent tree fruits, has been found a more profitable field for the development of large acreages of berries. The most important of these crops are red raspberries, strawberries, loganberries, and blackberries. On some of the bog lands of the southern part of Western Washington cranberries are grown and are rapidly developing into an exceptionally profitable crop.

Scope of Industry.

Fruit production fluctuates perhaps in a greater degree than other crops which engage the attention of the tillers of the soil. Washington, in common with other fruit-growing commonwealths, has its years of maximum fruit crops and likewise has its years when adverse weather conditions, late frosts, and other disadvantages which are the common lot of the fruit growers tend materially to cut down the yield.

The industry, however, at the present time is so firmly established and the fruit districts are so widely distributed throughout the state that even in what are known as bad years an enormous tonnage of both orchard and small fruits is annually contributed by this state to help supply the constant and never satisfied demand for fruit.

Probably it would be safe to say that Washington is producing and marketing fifteen thousand car loads of fruit annually, having a value between ten and twelve million dollars. From the fruitgrower's standpoint an "off year" does not necessarily mean an unprofitable year, A small crop ordinarily brings to the grower a higher price for his product than he realizes when his trees carry a maximum load of fruit. His expenses in such years for crates, picking, packing and for the care of his orchard are materially reduced. Generally speaking, however, the Washington fruitgrower who has been fortunate enough to locate his orchard on proved fruit land need not worry concerning his crop.

Advantages Enjoyed.

The fruit grower who has been fortunate in the selection of his location and in successfully bringing his orchard to the bearing stage enjoys certain marked advantages which are not common to other branches of farming. Horticulture is a highly specialized industry. It depends not so much upon the area of land under cultivation as it does upon the intelligence, skill and foresight which the orchardist applies to his business. The orchard districts of this state are made up in large measure of five, ten, and twenty acre tracts. The fruit-grower has his permanent home on his land. He has neighbors close at hand, has the benefit of excellent public schools, church facilities, rural mail delivery, telephone, and in many cases his home is lighted by electricity. His land has a higher valuation for taxation purposes than ordinary farm land and for that reason he usually enjoys the advantages of highly improved roadways and other public conveniences.

The highly developed fruit sections of the state almost invariably have easy access to flourishing trading centers. Small towns are scattered throughout the various fruit belts and a two or three mile drive usually brings the fruit-grower to the door of the merchant who supplies him with the commodities required for his orchard and home.

His routine of life is much the same as that which applies in any small American community. He knows nothing of the disagreeable isolation which was the lot of the farmers of bygone generations. He meets with his fellows at the school house or in community buildings where ideas and experiences are interchanged and where public questions are freely and profitably discussed. He is on terms of close acquaintance with the residents of the nearby towns and has access to the social advantages which are an essential feature of our American life.

It must not be thought, however, that the fruit-grower's pathway is one that is entirely strewn with roses. A considerable initial capital is required to warrant him a reasonable prospect of success in his undertaking. He must exercise the greatest of care and prudence in the selection of a location. If he undertakes the development of a new orchard he must anticipate a series of from five to seven years before he can expect his venture to show a profit. He must be alert at all times in fighting the pests which wage incessant warfare upon his trees, and he is confronted at all times with the serious problem of finding a steady and profitable outlet for his products. The solution of this latter problem is being sought through various agencies. Fruit-growers associations and unions have been formed in practically all of the fruit growing sections. State and government experts have been enlisted in an endeavor to effect an economical and profitable distribution of the fruit crop throughout the large consuming centers of the country. Through the operation of these various forces, great progress has been made in disposing of the surplus products of the orchards of Washington. It must be realized, however, that fruit of any kind is a perishable product. In particular with reference to pears, peaches, berries and others of the softer fruits a market must be found for them at the time when they are best suited to meet the consumer's needs. These natural and unavoidable conditions surround the fruit industry with a greater or less degree of uncertainty. But on the other hand when conditions are favorable the same situation works largely to the advantage of the man who has prime fruit for sale.

The ideal condition for the fruit grower is found in cases where an area of land equal to or greater than that given over to the orchard is utilized for purposes of general farming. A pasture lot, a few acres in alfalfa, some corn, and a garden constitute an insurance policy against fruit failure or low prices which every experienced orchardist fully realizes and appreciates. Fruit growing is like any other industry. When the eggs are all in one basket the possibility of disaster must be accepted.

Fruit Districts of the State.

The principal fruit producing sections of Eastern Washington are the Yakima Vallay, the Wenatchee Valley, the districts surrounding Lake Chelan, the Methow Valley, the Okanogan Valley, the country surrounding and north of the city of Spokane, and certain portions of the extreme southeastern section of the state. In practically all of these districts the fruit lands are under irrigation. Along the Columbia River and other streams comparatively small areas have been found where excellent fruit is produced without the application of artificial irrigation. In Western Washington a large and growing berry industry has been developed in the Puyallup and Snohomish valleys and upon Vashon Island and others of the islands of Puget Sound. In Clarke County, located in the extreme southwestern section of the state, prune orchards have been developed upon a considerable scale and have been found an exceptionally profitable crop.

The above districts are mentioned particularly as representative locations where fruit growing is practiced upon a commercial basis. There is no county in the state which does not produce some fruit and the home orchard is an accepted feature of rural life in practically all sections of Washington.

Fruit Districts of Eastern Washington.

The most highly developed fruit sections of Eastern Washington are located in the valleys of the several streams which find their origin in the snow capped peaks of the Cascade Mountains. These streams fed from the eternal snows which cover the mountain tops, supply the fertile lands of the river valleys with the moisture requisite to compel them to yield of the fertility with which they have been charged during the passing centuries.

The work of reclamation has not been confined entirely to the lands immediately adjacent to the streams. In many cases it has been found that the higher levels are better adapted to fruit growing than the low lands. Such areas are more likely to be immune from late frosts and usually are advantageously situated with reference to air drainage, which is a vital factor in successful fruit production. To water these higher lands it has been found necessary in some cases to install vast storage works in the headwaters of the streams. These reservoirs afford an unfailing supply of moisture under absolute control and available throughout the irrigation season to supplement the normal flow of the streams. It is by no means an uncommon sight in the river valleys of Eastern Washington to see the irrigation flumes clinging to the cliffs high above the river level carrying their precious burden of moisture to supply the favored fruit lands along the benches which lie high above and extend for miles back from the rivers.

The Yakima Valley.

The Yakima Valley produces by far the heaviest annual tonnage of any of the fruit growing districts of Washington. This valley embraces three large and important counties, namely, Kittitas, Yakima and Benton. The Yakima Valley is known as the original home of irrigation in the state of Washington. In the earliest day of territorial settlement farming by irrigation was practiced along the banks of the Yakima River and its tributaries. Small diversions of water were made by the farmers who tested and proved in that manner the marvelous capacity of the valley soil for banner crop production. Later on when more settlers arrived in the valley, communities joined hands in the construction of more ambitious irrigation canals. At a still later period large corporations entered the field, secured rights to water from the streams and began what may be termed the era of the construction of permanent irrigation projects. Finally the federal government under the broad powers conferred by the reclamation act, entered the valley with a view to the reclamation of all its vast irrigable area.

The government projects either under actual course of construction or already approved within the confines of the Yakima Valley contemplate the reclamation of more than four hundred thousand acres of land. As a preliminary to the commencement of government work in the valley it was necessary to adjudicate all the then existing rights to water from the Yakima River and its tributaries. It was found upon investigation that the claims of private individuals and companies to water in the valley far exceeded in the aggregate the total minimum flow of the Yakima River. Before proceeding with any construction work the government undertook and successfully carried out a plan of allotting the waters of the river among the various claimants. When the various apportionments had been satisfactorily agreed upon, the Reclamation Service took over on behalf of the government what is known as the Sunnyside Project. This great project located in Yakima and Benton counties embraces close to one hundred thousand acres of first class agricultural land, most of which is now receiving water and is under cultivation. Four other projects are included in the government undertaking in the Yakima Valley, as follows: Kittitas Project in Kittitas County, area seventy thousand acres. Tieton Project in Yakima County, area thirty-five thousand acres. Wapato Project and extensions located in Yakima County, area one hundred and fifty thousand acres. Benton Project located in Benton and Yakima counties, area one hundred and eighty thousand acres. In addition to the foregoing, plans are also under development which will reclaim a large area of land located on the higher levels not at present reached by any of the existing irrigation systems.

Storage Works.

As already indicated, the government officials found upon the entry of the Reclamation Service into the Yakima Valley that the normal flow of the river had previously been appropriated. To meet the requirements of the vast projects above outlined, it was found necessary to undertake the construction of immense storage plants in the mountains to provide a supply of water available during the period of low water flow, which begins about the first of July. The plans for storage as outlined by the Reclamation Service, include the construction of impounding dams at Lake Kachess, Lake Keechelus, Bumping Lake, Lake Cle Elum, and McAllister Meadows, located at the headwaters of the Yakima River and of its larger tributaries. Several of these projects are now well along toward completion and the available water supply is well in advance of the actual development of the land. The Sunnyside and Tieton projects are now practically completed. The Wapato project, located on the Yakima Indian Reservation comprising with extensions a total of one hundred and fifty thousand acres of land, has already been partly reclaimed under a temporary system of ditches constructed by the United States Indian Service. Under these canals there are now farmed approximately sixty thousand acres of land. The permanent distributing system which ultimately will embrace the area already under ditch, as also the remaining ninety thousand acres not yet reclaimed, was authorized at the last session of Congress. The initial appropriation for the work became available on the first of July of the present year, 1916, and is being expended in the construction of a diversion dam and in further extensions of the existing system.

Private companies organized prior to the commencement of government operations in the valley are still operating on an extensive scale, and the lands under these canals are heavy contributors to the annual output of Yakima Valley crops.

Products of the Yakima Valley.

While as has already been noted, the Yakima Valley is the heaviest contributor of any one district to the horticultural products of the state, fruit growing is by no means an exclusive occupation of the residents of the valley. The district may better be described as a diversified farming country. Alfalfa, clover and timothy hay are raised on a large scale. Grains of all kinds are produced on the irrigated and sub-irrigated lands, while cantaloupes, water melons, hops, onions, potatoes, truck garden vegetables, etc., are standard crops. An excellent idea of the purposes for which the lands of the Yakima Valley are adapted will be found from the following government reports of the last crop season for the Sunnyside and Wapato Projects:

Wapato Project.

IRRIGATED AREAS.

	Acres
Alfalfa (old)	20,549.00
Alfalfa (new, cut this year for first time)	743.50
Alfalfa (new, with grain)	4,650.75
Bearing orchard (clean cult.)	1,083.50
Bearing orchard (in alfalfa)	1,279.00
Bearing orchard (in grain)	151.00
Bearing orchard (other crops)	140.00
Young orchard (clean cult.)	380.00
Young orchard (in alfalfa)	109.00
Young orchard (in grain)	178.00
Young orchard (other crops)	182.50
Clover	1,471.00
Pasture	1,691.50
Barley	1,056.00
Wheat	3,864.50
Oats	1,428.50
Corn	1,961.85
Timothy	1,290.00
Rye	50.00
Cantaloupes and watermelons	1,162.75
Hops	80.00
Onions	142.00
Truck	768.00
Potatoes	2,321.25
Nursery	220.00
Miscellaneous	1,204.15
Total irrigated	48,157.75

SUB-IRRIGATED AREAS.

	Acres
Alfalfa (old)	725.00
Alfalfa (new, cut this year for first time)	6.00
Alfalfa (new, with grain)	86.00
Bearing orchard (clean cult.)	5.00
Bearing orchard (in alfalfa)	33.00
Bearing orchard (in grain)	26.00
Bearing orchard (other crops)	37.00
Young orchard (clean cultivated)	23.50
Young orchard (in grain)	10.00
Young orchard (other crops)	5.50
Clover	15.00
Pasture	791.50
Barley	114.00
Wheat	937.00
Oats	177.50
Timothy	13.00
Truck	17.00
Potatoes	10.00
Miscellaneous	7.00
Total sub-irrigated	3,039.00

SUNNYSIDE PROJECT.

DEPARTMENT OF THE INTERIOR, UNITED STATES RECLAMATION SERVICE.
WATER USER OR PROJECT—YAKIMA-SUNNYSIDE. YEAR OF 1915.

CROP	Area Acres	Unit of Yield	YIELDS				VALUES		
			Total	Per Acre			Per Unit of Yield	Total	Per Acre
				Average	Max.	Min.			
Irrigated for production of this crop—									
Alfalfa and hay	26,042	ton	104,168	4.0	7.5	1.0	9.00	$937,512	$36.00
Apples	3,564	pound	19,269,000	2,250.0	30,000.0	850.0	.021	404,649	47.25
Barley	312	bushel	9,865	31.6	50.0	10.0	.65	6,412	20.54
Clover and hay	293	ton	879	3.0	4.0	1.0	10.00	8,790	30.00
Corn	8,165	bushel	489,900	60.0	125.0	25.0	.60	293,940	36.00
Corn fodder	1,032	ton	11,352	11.0	20.0	5.0	6.00	68,112	66.00
Small fruit	464	acre	464	....	....	....	140.00	64,960	140.00
Garden	1,349	acre	1,349	....	....	....	100.00	134,900	100.00
Hay, except above	839	ton	2,517	3.0	4.0	0.5	9.00	22,653	27.00
Hops	170	pound	408,000	2,400.0	3,200.0	1,200.0	.11	44,880	264.00
Oats	207	bushel	12,420	60.0	100.0	30.0	.45	5,589	27.00
Pasture	3,326	acre	3,326	....	....	....	20.00	66,520	20.00
Peaches	1,059	pound	6,235,320	5,900.0	40,000.0	480.0	.0125	77,842	73.50
Pears	1,144	pound	8,084,600	7,067.0	60,000.0	1,000.0	.016	129,353	113.07
Prunes	206	pound	2,619,440	12,230.0	34,000.0	560.0	.024	62,869	305.13
Potatoes	4,025	bushel	872,300	217.0	600.0	30.0	.45	392,535	97.50
Wheat	1,595	bushel	31,900	20.0	40.0	10.0	.90	28,710	18.00
Less duplicated areas	3,875								
Total cropped	54,919	Total and average						$2,750,326	$50.08
Other purposes—									
Young orchard	6,108								
Young alfalfa	777								
Irrigated without crop	3,284								
Town and building sites	4,891								
Less duplicated areas	3,372								
Total other purposes	11,688								
Grand total irrigated	66,607								

AREAS	Acres	No. Farms	Per Cent of Project
Total irrigable area farms reported	68,840	2,558	62.11
Total irrigated area farms reported	66,607	2,558	60.10
Under water right applications	25,400	899	22.92
Under rental contracts	41,207	1,654	37.18
Total cropped area farms reported	54,919	2,558	49.55

Fruit Lands.

Fruit growing on a constantly increasing scale is practiced in all three of the counties of the Yakima Valley. In the vicinity of the city of Ellensburg in Kittitas County and even closer to the foothills of the mountains the orchard industry has for years been a permanent and substantial contributor to the prosperity of the people of that district.

In Yakima County where are located extensive areas of approved fruit lands, the industry has assumed tremendous proportions. Radiating in several directions from the city of North Yakima are a number of fertile valleys, all of which are heavy contributors to the county's annual output of fruit. In the lower sections of the county the lands of the Sunnyside Canal, as will be noted from the foregoing statistics, are in large measure devoted to orchard purposes. On the Yakima Indian Reservation a considerable acreage is likewise devoted to fruit, although on a less scale proportionately than is found elsewhere in the county. Benton County also has a large acreage in orchard with numerous plantings made in recent years soon to come into bearing. In the Kennewick district, where the Yakima River joins with the Columbia, conditions have been found extremely well adapted to the development of the strawberry industry. The Kennewick berries come on to the market several weeks in advance of the Puget Sound crop and invariably bring the growers an attractive price for their product.

Evidence of the permanent character of the orchard industry in the Yakima Valley is found in the preparations which the railroad companies have made to handle the annual orchard output. Branch lines extend into the fruitgrowing districts with loading stations located at intervals of two and three miles, as best suits the convenience of the growers. Immense ice storage plants with a capacity of thousands of tons have been constructed at several points in the valley for icing the refrigerator cars which carry the soft fruit products of the valley to distant markets.

For the purpose of lending stability to market conditions, several large cold storage plants have been constructed in the valley and are an important factor in preventing violent price fluctuations during the harvest season.

The Wenatchee Valley.

The Wenatchee Valley, the second most important fruit producing district of Washington, is located in Chelan County. Like the Yakima Valley, its lands are of volcanic origin and are watered by streams which find their sources on the eastern slopes of the Cascade Mountain Range. The Wenatchee Valley has long been famous for the high grade character of its fruit, which is well known and appreciated in the markets of all the large eastern cities as well as in many foreign countries.

The valley is traversed by the Great Northern Railway for its entire length, and its eastern boundary is formed by the Columbia River which furnishes additional and important transportation facilities.

This valley is essentially a district of small farm and orchard holdings. Journeying from west to east, the traveler scarcely emerges from the foothills of the mountains when his vision is confronted by a panorama of orchards and garden fields, which continuously unfold before him for the entire remaining length of the valley.

Well improved roads have been constructed throughout the district, not only affording the land owners quick and comfortable access to the various trading centers, but likewise providing for the tourist a most enjoyable and attractive scenic trip.

The individual land holdings in this valley are uniformly small, particularly as applied to the fruit industry. The growers have found it profitable to devote their effort to the intensive improvement of five, ten, and twenty acre tracts. As a consequence the valley is thickly populated and the inhabitants enjoy all of the conveniences and comforts which the modern conception of rural life affords.

Prior to the development of the fruit industry in this section small diversions of water were made from the Wenatchee River, which is the principal stream of the valley. In this manner the farmers made a beginning in the production of alfalfa and other farm crops and paved the way for the later development which has followed. Small orchards were planted by many of the settlers and when these had developed to a producing stage the adaptability of the district to fruit growing upon a commercial scale became well established. Since that period fruit growing has developed upon an extensive scale, all under privately owned systems of irrigation. At the present time nearly all of the available irrigable land from the town of Leavenworth, well up in the mountains, to the splendid little city of Wenatchee, located near the junction of the Wenatchee and Columbia rivers, has been brought under ditch and is now in cultivation.

In addition to the famous red apples, other fruits such as peaches, pears, apricots, cherries and plums have been found profitable and are produced on an extensive scale.

Special Advantages.

Numerous special advantages accrue to the settler in this well favored section. Transportation to markets both east and west is right at hand. The climate is mild and equable and extremes either of heat or cold are of rare occurrence. The mountains are close at hand with numerous streams providing excellent fishing and camping sites, thus affording quick relief from the high temperatures of the mid-summer days.

The Entiat Valley.

The Entiat River is second in importance of the streams of Chelan County. It likewise rises in the Cascade Mountains some distance north of the Wenatchee River and finds its way to the Columbia, following a course somewhat parallel to the former. Irrigation is practiced along the banks of this stream and for a distance of fifteen miles above its confluence with the Columbia will be found a section of well-developed orchards and farm homes. Peaches are grown on a considerable scale near the Columbia River, and farther up the valley the finest grades of winter apples are standard crops.

This valley is considerably narrower than the Wenatchee Valley, but its lands, soil, climate and other features are generally similar in character.

Lake Chelan.

Although until recent years remote from transportation facilities, the lands adjoining this beautiful lake have for years produced considerable crops of apples and other fruits. In the earlier days the growers attained more or less success in apple production without resorting to artificial irrigation. It was found, however, that when the trees reached maturity they demanded a greater supply of moisture than the soil afforded and in recent years the better lands have been brought under well constructed systems of irrigation. Fruit growing is now practiced upon a commercial scale in this section with every prospect that it will continue to grow in extent and importance in coming years.

The Lake Chelan country is one of the most beautiful of Washington's many scenic assets. The lake itself is located in the heart of the mountains, surrounded by towering peaks, and attracts each summer a continually increasing number of tourists and campers. The recent completion of an extension of the Great Northern system from Wenatchee to Oroville has brought the district within reasonable reach of needed transportation facilities.

OTHER ORCHARD DISTRICTS OF EASTERN WASHINGTON.

The Methow Valley.

Still farther north of the Wenatchee Valley the Methow River, a turbulent mountain stream, rushes down from the Cascade summits to a point of junction with the Columbia at a distance of about sixty miles north of the city of Wenatchee. Fully fifty miles of the lower portion of this valley is well adapted to a wide variety of agricultural and horticultural purposes. In many places the valley is several miles in width, the lands gently sloping on either side of the river back to the foothills and presenting conditions of soil, drainage, etc., which have made the valley attractive to the fruit grower as well as to the general farmer. The irrigated lands in this district have been developed under private systems of irrigation. A plan has been worked out whereby orchard lands have been brought into bearing by the irrigation companies for the owners and through this means and through the efforts of individual orchardists a large acreage chiefly devoted to the production of winter apples is now contributing to the annual fruit crop of Washington.

The Okanogan District.

The Okanogan District is a country of important but as yet largely undeveloped resources. It is characterized by high mountains, extensive rolling hill lands and fertile river valleys. The principal development from a horticultural standpoint has been along the last mentioned.

Some orchard development has taken place in what is known as the Brewster Flat country, a district comprising about fifteen thousand acres of bunch-grass land located near the confluence of the Columbia and Okanogan rivers.

The Okanogan Project.

Some miles to the north and bordering along the west bank of the Okanogan River is located what is known as the Okanogan irrigation project. This project, comprising somewhat more than ten thousand acres of land, has the distinction of being the first irrigation enterprise to be undertaken and brought to completion by the United States Reclamation Service within the confines of the State of Washington. The lands extend up and down the Okanogan River a distance of about ten miles. Originally they were covered with a heavy growth of bunch-grass and were a favored grazing section for herds of cattle and horses which roamed at will over their broad areas in the early days when the stockmen knew no restrictions of fence lines or government reservations. At the present time these lands are the center of a growing fruit industry devoted chiefly to the production of Winesap, Jonathan, Spitzenberg, Rome Beauty and Newtown Pippin varieties of apples.

Other smaller orchard districts occur along the Okanogan Valley, and at Oroville, located close to the Canadian border, an important irrigation project has been completed within the past year. The lands of this project have been thoroughly tested and found well adapted to the production of superior orchard fruits. With the completion of a permanent system of water supply this particular district has before it a period of certain development.

Northeastern Washington.

Stevens and Pend Oreille counties, located in the extreme northeastern section of the state, while as yet they are not heavy shippers of fruit, still present possibilities of importance to anyone surveying the state from a horticultural standpoint. In the valleys of these counties irrigation is practiced upon a small scale and particularly in Stevens

County a considerable orchard acreage has already been developed. In the Kettle Falls section a considerable acreage of land has been under irrigation for some years and is largely devoted to fruit. Along the Columbia River open stretches of land have been occupied and planted to orchard with results that have proven eminently satisfactory. In addition to the orchards actually yielding, there is a large acreage which will come into bearing in the next few years.

Spokane County.

Spokane County is the third largest county in the state with respect to the number of fruit trees in bearing and is equally important with respect to the area of young orchard that will begin producing within the next five years. The orchard districts for the most part are located in the valley of the Spokane River, extending in a generally eastward direction from the city of Spokane to the Idaho boundary. To the north of Spokane is a large area of cut-over pine lands that have been cleared and planted to orchard. Fruit grown in Spokane County is of superior quality and the orchards by reason of close proximity to several transcontinental railways and the markets offered by the city of Spokane, occupy an unusually favorable position. Among the principal fruit districts of this county may be mentioned Opportunity, the Vera project, the Spokane Valley Land & Water Company's project, and the Arcadia Lands.

The Big Bend District.

In the counties of Douglas, Grant and Lincoln, occupying what is commonly known as the Big Bend country, will be found numerous small areas that have been successfully developed for orchard purposes. These lands generally lie along the banks of the Columbia, in some of the watered coulees or on the rolling prairies where pumping plants have been installed to supply the necessary irrigation. The output of fruit from these counties for commercial purposes has been very small although each of them has considerable plantings which will shortly come into bearing.

Southeastern Washington.

In the southeastern portion of the state a group of counties comprising Whitman, Walla Walla, Garfield, Columbia and Asotin, are all substantial contributors to the total output of Washington fruit. Walla Walla county, the heaviest producer of orchard products of this group of counties, has a considerable irrigated area in orchard. The Blalock orchard tracts are located in close proximity to the city of Walla Walla. The water for these lands is largely supplied from deep artesian wells.

In the western section of the county is located the Burbank project, which is watered from the Snake River. Southwest of Walla Walla are the Gardena tracts where the growing of Winesap apples has been established upon a considerable scale.

In the Clarkston district of Asotin County a large irrigation project has been developed and a considerable acreage has been planted to winter apples. Cherries, peaches, and grapes are likewise staple products of this locality. In the Cloverland section, located on a plateau two thousand five hundred feet above sea level, will be found another prosperous orchard district where cherries, plums, prunes, pears and apples are successfully grown.

Other Lands.

In this brief survey of Eastern Washington from a fruit-growing standpoint it has been impossible to describe or even mention all of the districts where fruit production has assumed commercial proportions. There are numerous other smaller sections in addition to those already mentioned where all of the standard fruits of the temperate zone are successfully grown.

FRUIT GROWING IN WESTERN WASHINGTON.

Fruit growing is one of the lesser industries of Western Washington. This vast region embracing the territory lying between the Pacific Ocean and the summits of the Cascade range of mountains is still covered in large measure by virgin growth of evergreen timber. Lumbering and its subsidiary industries, together with an ever-growing volume of commerce, both foreign and domestic, furnish the chief occupations of the people. With these are to be coupled a great fishing industry which employs thousands of men and is a substantial contributor to the prosperity of this section of the state.

As has already been suggested, however, there are considerable areas of agricultural land in the river valleys of Western Washington and on the uplands adjacent to Puget Sound, which having once been cleared of their timber growth have provided an inviting field for the tiller of the soil. The counties of Western Washington do not figure prominently in the fruit shipping statistics of the state when compared with such highly developed orchard districts as Yakima and Chelan counties. The cool, moist climate is not conducive to imparting the high color to the apples which is the characteristic feature of the same fruit produced in the orchards of Eastern Washington. However, it has been found by practical tests that apples of very satisfactory size and flavor can be produced in many favored localities of Western Washington, and a large tonnage of this fruit is annually produced, finding consumption for the most part in the local markets.

Cherries, plums, prunes and small fruits yield abundantly in practically all sections of the western part of the state and in Clarke County, in the southwestern section, prune production has been an important industry for many years.

In Pierce County the thriving towns of Puyallup and Sumner are the distributing points for an important berry industry. The valley lands surrounding these communities have been found particularly well adapted to the production of red raspberries and other small fruits. The berries come to the marketing stage firm and plump and suited for shipment to distant eastern markets. The growers in these communities are united in an organization which directs the distribution of their crop. Carload shipments of berries go out daily during the shipping season to the large eastern markets where they find ready sale at profitable prices. That part of the crop which is not suitable for distant shipments is utilized in a large cannery which also handles other fruits, including importations from the orchards of Eastern Washington.

Snohomish County is another section where small fruits are grown upon a commercial scale. Raspberries, blackberries and loganberries are extensively produced in this section, and the county is also widely recognized in Western Washington for the superior quality of its orchard fruits.

Vashon and Maury, two large islands of Puget Sound, are the centers of an important strawberry industry. The soil and climatic conditions on these islands have been found particularly well adapted to this fruit and a large area of logged-off lands is devoted to this industry. Vashon Island alone annually markets nearly $40,000.00 worth of strawberries which helps supply the markets of the large commercial and industrial centers of Western Washington. Strawberries are also grown upon an increasing scale on the lower levels east of Seattle and bordering upon the shores of Lake Washington.

In Skamania County will be found another section in which strawberry growing has developed to large proportions and there is also in this county much land that is particularly well suited for general orchard purposes. Skamania County fruit is recognized as the equal of any produced in the Northwest.

In general, the conditions described in the foregoing will be found applicable to the remaining portions of Western Washington. In some counties the area of land available is comparatively small, owing to the fact that the original timber growth still awaits the coming of the lumber jacks.

A phase of the fruit growing industry of Western Washington more important by reason of its latent possibilities than on account of its development thus far, is the cranberry industry. In Pacific County around Willapa Bay is a district of three thousand to four thousand acres of low marshy lands which are today producing and marketing an exceptionally superior quality of cranberries. The products of these marshes sell in competition with the best cranberries of the East and the industry is one that is certain to attain important proportions in the future.

CONCLUSION.

What has been presented in the foregoing has been intended merely to give the reader some general insight into the scope and magnitude of the fruit industry of this state. Obviously, within the limits of these pages it is impossible to offer detailed facts and figures with reference to each fruit growing locality, but a sufficient showing probably has been made to afford reasonable proof of the contention that the fruit growing industry has already attained important proportions in Washington. The acreage that has been planted in orchard and which is not now in bearing is vastly larger than the area now in production. It is quite safe to assert that within the next five years the output of Washington fruit will be double or possibly treble the present production. A final word may be spoken with reference to the varieties of the different orchard fruits utilized for commercial purposes. The leading varieties of the different fruits may be enumerated as follows:

Apples—Winesap, Jonathan, Rome Beauty, Spitzenberg, Newtown Pippin, White Winter Pearmain, Yellow Transparent, Arkansas Black, Delicious, Winter Banana.

Pears—Bartlett, Anjou, Winter Nells, Comice.

Peaches—Elberta, Crawfords, Carmen, Slappy.

Cherries—Bing, Royal Ann, Lambert, Black Republican, Early Richmond.

DAIRYING.

Scarcely more than ten years ago importations of butter from Oregon, California and the eastern states into the State of Washington were estimated in terms of millions of pounds annually. For the year 1905 the cities of Seattle, Tacoma, and Spokane brought in from the sources above mentioned more than five million pounds of butter. In that period of the state's history it was not uncommon for large dealers to advertise a trainload of Iowa butter. At the present time the dairymen of this state are capable not only of supplying the home demand, but are likewise reaching out for outside trade. This does not mean that no butter produced outside of Washington finds a market in the state. Considerable quantities are still imported and will continue to be. But nevertheless it is well established that Washington is capable at the present time of furnishing its people with everything they require in the line of dairy products.

When it is considered that the population of the state has increased by fully fifty per cent during the past ten years it will at once be apparent that some tremendous forces have been at work in connection with the development of the dairy industry. The three principal factors which have entered into and influenced the remarkable change which has been accomplished in so short a period may be enumerated as follows: (1) The soils of the state which have been found wonderfully well adapted to pasture purposes, and to the production of maximum yields of forage crops. (2) Climatic conditions which lend themselves in every respect to successful dairying. (3) The extraordinary growth of the commercial and industrial centers of the state which have supplied a market ready and alert to absorb the continually increasing output of Washington dairy farms.

Dairying is no longer a haphazard industry. It is a highly organized business of its own and when conducted upon scientific principles and under the favorable conditions which are presented in this state offers a field of industry uniformly satisfactory and profitable.

Both the state and federal governments have interested themselves in furthering the interests of Washington dairymen. An unceasing campaign of education has been in progress for years, having for its purpose the building up of improved dairy herds. Practically every dairyman in the state has access to the experience and instruction of government and state experts. Constant demonstrations of improved dairying methods are carried on in every section where dairy farming is followed and to these must be added the important influence of state and county fairs, stock judging contests, and dairy cattle shows which are annual occurrences throughout the state. Another influence of prime importance in building up and improving the dairy herds of Washington is the system of inspection constantly in operation under state and municipal auspices. The dairyman who escapes the influence of these various agencies for the betterment of his calling must reside in some altogether isolated location or else be extremely indifferent to his own interests.

Principal Districts.

It is difficult to point out any particular sections of the state which are best adapted to this industry. King County, according to returns of the county assessors, has the largest number of dairy cows of any county in the state. But this is due primarily to the fact that King County contains within its borders more than twenty-five per cent of the total population of Washington. Many other districts enjoy advantages equal to those possessed by King County in connection with this industry, although these advantages are not the same in all localities. Western Washington as a whole has often been described as a natural dairy country. In this favored section except for a brief period in midsummer the pastures are green throughout the year. An intricate network of rivers and small streams, whose cooling waters trace their sources to the glaciers and snow-capped peaks of the mountains, furnish an invaluable auxiliary to successful dairying. Root crops suited to form a large part of the dairy cow's ration are produced in great abundance and ready markets are almost invariably available to absorb the products of the dairy farms.

In the warm irrigated valleys of Eastern Washington advantages of equal importance, though of a different character, are discovered. In this section immense crops of alfalfa and other grasses are produced and to these, recent years have added a large and constantly increasing acreage of corn. This latter crop is often cut green for silage purposes or it may be allowed to mature and be harvested for winter feed. A heavy tonnage of surplus alfalfa annually finds its way from Eastern Washington to the dairying centers of the coast to help carry through the winter the dairy cattle of that section.

Dairy farms may be found in practically every county in the state which are typical of the industry generally. On such farms the inquirer will be shown a herd of pure-bred or high grade cows housed in comfortable and sanitary buildings during the winter, and provided with ample pasturage for the other portions of the year. He will find scientific equipment for testing the milk of each member of the herd and will be advised of methods in force for eliminating the nonproducers or unprofitable cows. Machinery driven usually by electric or gasoline power for cooling and separating the milk will be exhibited to him and he will be impressed by the precaution exercised by the proprietor to insure that his product reaches the market under the most approved sanitary conditions. On the larger dairy farms milking machines will be found in operation and the buildings will be found electrically lighted and supplied with other accessories in common use by the modern farmer. The silo has become an almost indispensable feature of the dairy industry and the number of these to be found on the average Washington dairy farm is governed by the extent of the individual dairyman's operations. In charge of a dairy farm such as above described, in almost every instance, there will be found a man who is not only a good farmer, but a business man as well. His family will be found comfortably housed and well provided with the conveniences which contribute to make the pleasant surroundings of a modern American home.

It is not to be understood, to be sure, that every dairy farmer in the State of Washington conducts his business under such favorable conditions as are above outlined. There are those who still adhere to scrub stock and who in other ways lag behind the procession. But the general tendency among the men and women engaged in dairy farming in this state is to build up better herds and to provide themselves with the equipment which experience has shown to be necessary for a realization of maximum results from the industry in which they are engaged.

Some mention already has been made of the principal crops which the dairymen produce for the purpose of supplying feed for their herds. Other products of less importance, perhaps, but which are important contributors to successful dairying in Washington, may be named. In Western Washington such crops as white and red clover for pasture, and oats, barley, wheat, rye, peas, vetch and kale, will be found extensively grown. Alfalfa and corn are the standard dairy crops in Eastern Washington, but these are supplemented frequently by pasture lands of native grasses, barley and oats and heavy crops of various root products.

Markets.

The question of markets has never been a serious problem for the Washington dairyman. In districts where any considerable number of farmers are engaged in the industry one or more creameries will almost invariably be found in operation. These creameries maintain a regular service for collecting the cream from their patrons. In the vicinity of the large cities a profitable market is found in supplying the demand for fresh milk and cream and in several districts large condensing plants have been established which are in the market for an unlimited supply of milk. The Alaska trade is also a heavy consumer of Washington dairy products and the business of Washington dairymen with Uncle Sam's great northern territory is certain to grow and expand with the coming years.

LIVE STOCK.

It probably is correct to say that no industry of the State of Washington has undergone greater changes, due to the rapid development and settlement of the state, than has the live stock business. In early territorial days much of the eastern portion of Washington was an open range. In this vast region broad areas of bunch-grass and other native forage feed was offered to the livestock men and became the basis upon which many of them accumulated large herds of cattle and horses and immense bands of sheep. The range was open and free and apparently was inexhaustible in extent. The cattle men flourished and became wealthy. But with the advent of railroads and the influx of thousands of settlers bent upon securing homesteads in the open areas of the state the situation became materially modified. The open range began to disappear before the encroachments of fenced-in farms and the large herds which formerly had ranged the plains without let or hindrance materially dwindled.

This process has been in progress for many years, but it has not resulted in wiping out the livestock industry nor in fact should it be said that the business as a whole has decreased either with respect to the number of livestock in the state or with reference to actual cash returns to those engaged in the industry.

The vital difference is found in the fact that the comparatively few stock men who formerly numbered their herds by the thousands have been succeeded by thousands of farmers each owning a comparatively small number of cattle. One result has been that a far superior grade of stock is now produced in the state than was the case under the earlier conditions. The farmer who annually markets a few head of fat steers has found it to his advantage to produce a high grade animal rather than to bother with the scrub stock of the earlier days. The markets of the state are largely supplied with beef cattle from these small farmers, and the number of marketable animals secured from this source increases annually.

In some sections of the state feeding on a large scale is still practiced and will be for many years to come. There are numerous ranges of hills in Eastern Washington which have not been placed under cultivation and are not likely to be for several decades. Such locations often furnish excellent range and full advantage is taken of every such opportunity. In the irrigated districts of the state where large crops of alfalfa are annually grown, thousands of steers are brought in from other states each fall to secure the benefits of the late pasture. The climate of these sections is admirably adapted to the wintering of stock. After the alfalfa pasture is exhausted the animals are fed through the winter on alfalfa hay and are topped off for market with a liberal feeding of corn and some other grains.

Forest Reserve Pastures.

In addition to the foregoing, opportunities for pasturing stock are offered on the ranges which are located within the government forest reserves. These reserves cover practically all of the mountainous area of the state extending often well down to the foothills. Much of the lower areas within the reserves furnish excellent pasture and there is lively competition among the stockmen for the more favorable locations.

Horses.

In spite of the fact that automobiles and motor trucks are being utilized on a constantly increasing scale, there seems to be no let up in the demand for good horses. According to the statistics of the United States Department of Agriculture, there were more than 300,000 horses in the State of Washington at the beginning of the present year, an increase of more than 100,000 during the past decade. What has been said in the foregoing with reference to conditions under which livestock is now produced in the state applies particularly with reference to horses. There are few, if any, horses roaming the ranges of Washington at the present time. Scattered bands will be found upon the Indian reservations and occasionally on the unfenced upland ranges but as a whole the industry is now carried on as a part of general farming operations. The breeding and sale of pure-bred horses is an industry that has assumed important proportions in this state in recent years. The favorite breeds are Percherons, Shires, Belgian, and French draft horses. For all of such animals produced in the state there is a ready market with no seeming disturbance of valuations in spite of the encroachments of the automobile.

During the past two years a steady and unfilled demand for horses of certain grades and weights has been offered to the stock raisers of this state by the various warring powers of Europe. Thousands of heads of horses have been sold at good prices to meet the requirements for cavalry and artillery animals and it is the testimony of the buyers for the different governments concerned that some of the best stock secured by them in this country has come from the ranches of the State of Washington.

Heavy draft horses and horses suited for general farming purposes seem to be most in demand. Such animals are bred in large numbers and are finding their way to the cities for use in handling heavy trucking business and to the countless farms of Washington as first aid to the farmer in producing and marketing his crops. In almost any rural section of this state a visit to the marketing center on a Saturday or special market day will convince the inquirer of the fact that the farmers of Washington appreciate good horse flesh. Even in the smaller trading centers hundreds of teams may be seen on such occasions and the great majority of them will be found on inspection to be animals of good blood and well adapted to the purposes for which they are used.

Sheep.

According to the estimates of the United States Department of Agriculture, there were 598,000 head of sheep in the State of Washington at the beginning of the present year. The high prices paid for wool as also for mutton during the past few years have made sheep growing an unusually profitable industry. These animals are a common sight in practically all of the farming districts of the state. They will be found on the valley and lower hill lands of Western Washington, on the islands of Puget Sound, and are bred and marketed by tens of thousands in Eastern Washington. Conditions in the Columbia River basin and in the irrigated districts adjacent thereto have been found ideal for sheep. In the Yakima Valley where the industry is conducted upon an extensive scale lambing operations frequently yield better than one hundred per cent. With the advent of early spring the lambs are ready to travel and by easy stages the flocks are driven from the winter feeding grounds in the lower portions of the valleys towards the foothills of the mountains, finding forage for themselves on the way. Once in the hills excellent pasture is provided for them and the flocks follow the receding snows until the approach of fall warns the herders to head once more for winter quarters. The sheep begin to arrive back in the valleys after the final cutting of alfalfa and for several weeks of the late fall and early winter they will be found in immense numbers pasturing on the alfalfa stubble. Thereafter they are fed usually in open enclosures until ready for market. Such operations as are above described are carried on usually by men who engage in sheep growing as an exclusive occupation. The market for mutton and wool is further supplied from smaller bands bred and cared for by individual farmers upon their own premises. On the Yakima Indian reservation there are a number of Indians who engage in the sheep industry on a considerable scale and have made themselves financially independent as the result of their operations.

In the aggregate, Washington produces a great surplus of sheep and trainload shipments from this state to the eastern markets are of common occurrence.

Hogs.

The breeding and fattening of hogs for market is an industry that has undergone great development in recent years. This development has been due in large measure to the increased attention that has been paid to corn as a commercial farm crop. This important cereal, universally regarded as an indispensable adjunct to the production of first class pork, is rapidly forging to an important place in the list of grains produced in this state.

Once having demonstrated the fact that he could grow corn in quality and yield to compare favorably with the banner showings of the middle states, the attention of the Washington farmer has by the same fact been directed to the profits to be obtained from furnishing the market with fat hogs. As the corn growing area is confined largely to the irrigated districts of the state, so it will be found upon investigation that the bulk of the hogs are likewise grown in those districts. As is the case with other animals, the climatic conditions in the valleys where irrigation is practiced are favorable to the growing of hogs. Alfalfa or clover pasture will bring the animals through to the fattening period in prime condition. With corn and other grain then available for converting them into a marketable product, the farmer is able to send his hogs to the stockyards in prime condition to compete with eastern corn-fed pork.

Hogs are raised also in Western Washington upon a smaller scale. In this part of the state they are pastured and fed on various root crops and usually topped off for market with some grain. This industry is growing so rapidly that the time is at hand when Washington will be an exporter rather than an importer of high grade hogs and hog products.

Other Live Stock.

Although practiced upon a comparatively small scale, the breeding of mules has been found a profitable undertaking in several sections of the state. These animals are preferred to horses for some purposes and are always in good demand.

As a side line to the live stock industry the breeding and raising of goats has a place of fixed though minor importance. The principal breed is the angora goat, which has been found an excellent aid to settlers upon logged-off lands in clearing their holdings of the rank undergrowth which is characteristic of the western section of the state. Small bands of these sure-footed animals will be found browsing on the hillsides, clambering over logs and securing their own subsistence from the natural forage offered. From the sale of the wool the farmers realize a sufficient return for the expense involved.

CONCLUSION.

As has already been suggested, the chief purpose of this introductory chapter has been to bring the reader into contact with the field in which the Department of Agriculture operates. A great deal of detail that might have been included has necessarily been omitted by reason of space limitations, and statistical tabulations for the most part have been purposely avoided. Much of this latter data will be found presented in the following pages in connection with the reports of the activities of the various divisions of the Department.

What has been offered in the foregoing will suggest at least some idea of the varied resources of this state, particularly as applied to the industries around which the duties of the Department are centered. It is a field of limitless possibilities from the standpoint of the men who are engaged in its actual development. From the standpoint of the officers and agents of this Department it offers a field of equally boundless opportunity for useful public service.

It is a source of satisfaction to acknowledge here the energy and zeal which the division heads and their assistants have brought to the discharge of their duties. The Department is making progress with the state. It is in a sense finding its way, just as the men who are engaged in the development of the state's resources are finding their way. The work of perfecting the organization of the Department in itself has been a constant and difficult problem. It has been necessary to establish precedents, to apply the statutes to the practical situations encountered, many of which were not contemplated by the lawmakers, and the work has been handicapped in some degree by lack of adequate appropriations. Nevertheless, substantial progress has been made. The laws are being enforced, and the powerful arm of the commonwealth is being directed with increased certainty and effect in the upbuilding and encouragement of agriculture and its allied industries.

In conclusion, it may truthfully be said that the centralized plan of administration made effective under the law of 1913 has fully justified itself under everyday working conditions. Some modifications and further strengthening of the law will be required from time to time, but it is apparent already that the present plan far excels the former system in economy, efficiency and in actual service rendered to the state.

DAIRY AND LIVESTOCK DIVISION

The activities of this division during the past biennium have been greatly increased over those of the previous period. This is due in a large measure to a general stimulus in dairy farming throughout the state, and to added duties resulting from legislative enactments.

The work of the division consists of dairy and creamery inspection, the control and eradication of communicable diseases of livestock, and the enrollment or registration of stallions.

DAIRY INSPECTION.

The primary object of the milk inspection service is to advance the public welfare through the protection of the public health. To accomplish this object and to insure the public against the wilful aduleration of milk by skimming, watering and the addition of preservatives, the State of Washington has enacted certain laws regulating the production and sale of dairy products.

Cows' milk has always been a staple article of food with all classes and is one of the best and cheapest foods on the market. It is one of the principal diets of invalids and is being used more and more for the feeding of infants, and in fact is often the exclusive food of children during the first years of life. It is principally consumed in the raw state, and being a very suitable medium for almost every description of germ life, which may gain access to it in its journey from the cow to the consumer, or even in the udder of the cow herself, can become a very dangerous food, should it perchance contain any deleterious organisms.

Milk, which includes cream, butter and cheese, usually passes through a number of hands in its procurement, collection, processing and distribution, therefore the problem of milk hygiene is very complex and must embody all phases of milk control, from the time it is produced until it reaches the consumer, and since its composition and wholesomeness are entirely dependent upon its proper production and handling, the necessity for a strict supervision is obvious. Milk inspection is made to cover the health and feeding of the cattle, the cleanliness of the producing plants, the methods of handling and caring for the milk, and the condition of health of the people who come in contact with it.

ANIMAL DISEASES AFFECTING MILK.

There are certain pathological conditions in the cow itself which may contaminate and render milk unwholesome. Some of the principal cattle diseases influencing the quality of the milk are Tuberculosis, Actinomycosis, Anthrax, Cowpox, Rabies, Septicemia, and Foot-and-Mouth disease. Mastitis or Garget in the cow's udder and other septic conditions as puerperal sepsis, septic metritis and suppurating wounds all constitute a grave danger to the milk supply and therefore must be carefully supervised and controlled. Every owner of a dairy herd should consider it his duty to himself and to the community to keep only healthy cows, supply them with wholesome food, and keep them in clean, comfortable quarters. He will also find it the most profitable.

DISEASES AND EPIDEMICS DUE TO MILK.

Mr. Ernest Kelly of the United States Department of Agriculture says:

"A full realization of the dangers from an infected milk supply can be obtained by a perusal of Bulletin 56 of the Hygienic Laboratory, published in 1909. At that time Trask noted 240 milk-borne epidemics reported up to 1895 by three investigators in England and the United States. Trask himself noted 260 additional epidemics, making 500 in all. The first reported milk-borne epidemic occurred in 1857.

"Chief among these epidemics have been those of typhoid, scarlet fever, and diphtheria, and within the past few years outbreaks of septic sore throat, such as those in Boston, Baltimore and Chicago. Tuberculosis among handlers of dairy products is also a menace, though its effects do not show in startling outbreaks such as those which accompany some of the other diseases. Hardly a month goes by without some report of a milk-borne epidemic. It is true that many newspaper reports of epidemics are not founded on data of sufficient scientific accuracy to attach these epidemics absolutely to the milk supply as the causative agency; but still enough reliable instances have been recorded to make this question one of vital importance to the average community.

SOURCES OF INFECTION.

Milk may be infected in the following ways:

1. By diseased persons who are suffering from a mild form of malady, and who themselves come into intimate contact with the milk somewhere between the cow and the consumer.
2. Carriers who, while they may be free from disease, harbor the organisms, which may be carried in the milk:
3. Transmission of pathogenic bacteria by persons who have been caring for the sick and who afterwards handle the milk.
4. Contaminated water supplies, in which the milk utensils are washed.
5. Fly contamination, either in the country or in the city.
6. The use of unsterilized milk bottles, collected from houses where disease exists."

DEFINITION OF CLEAN MILK.

"While a rigid application of the word 'clean' would exclude milk which contains foreign matter or any bacteria whatever, for ordinary purposes we may understand clean milk to be milk from healthy cows that is free from dirt and contains only a small number of bacteria, none of which are of a disease-producing nature.

By exercising proper care the number of bacteria which get into the milk during the process of milking is small, but these will increase rapidly if the milk is not kept cool until used.

If fresh milk contains a large number of bacteria, it indicates that the milk has become contaminated during the process of milking, although in some cases many of the bacteria may come from an infected udder.

If milk contains a large number of bacteria when it reaches the consumer either it is not fresh, has come from a diseased cow or has otherwise been contaminated, or it has not kept cool. Although such milk may contain no visible dirt, it is not bacteriologically clean and should not be sold as clean milk.

If milk contains large numbers of blood corpuscles or pus cells, it is an indication that the cow from which it was drawn is diseased.

Milk from a diseased cow, from one about to calve, or from one that has very recently calved possesses abnormal qualities, and though it may not always be dangerous to use, it can not be considered as clean milk and should not be used as such.

BACTERIA IN MILK.

Bacteria are single-celled plants so small that they can not be seen with the naked eye and belong to the fungi order of plant life. To most people the word "bacteria" immediately suggests disease, and while there are a number of dangerous or disease producing bacteria it is known that most varieties are classified as harmless; however, many of these so-called harmless varieties, especially when present in large numbers, have a deleterious effect upon milk by causing chemical changes in its composition and by influencing the color and odor.

Bacteria are omnipresent, being found everywhere in nature. Every particle of dirt, whether it seems to the eye a source of contamination or not, carries with it great numbers of bacteria.

All milk, unless collected under very exceptional circumstances, contains some bacteria. Milk furnishes all the food material and other necessary conditions for bacterial growth. The bacteria commonly found in milk grow most rapidly at temperatures between seventy degrees and one hundred degrees F. At a temperature below fifty degrees F. the growth is much retarded but continues slowly, as will be noted from the following table:

RAPIDITY WITH WHICH BACTERIA MULTIPLY IN MILK.

Relative growth of bacteria when held at different temperatures.

Temperature of Milk	Number per Cubic Centimeter at Beginning	Number at End of 6 Hours	Number at End of 12 Hours	Number at End of 24 Hours	Number at End of 40 Hours
50° F.	10	12	15	41	62
68° F.	10	17	242	61,280	3,574,990

The number of bacteria in milk depends first on the number of bacteria in the udder; second, on the amount of contamination from outside sources; and, third, on the rapidity of bacterial growth. The rate of growth depends on the temperature at which the milk is held and its age. It indicates the cleanliness and care observed in producing and handling milk.

Where milk contains large numbers of bacteria it is reasonable to suppose that under such conditions the danger of infection by disease germs will, as a rule, be greatly increased. For if a farmer or a dairyman is so careless and ignorant as to let his milk become so contaminated, he is not likely to be very particular about the health of his cows or of those who attend them.

Bacteria find their way into the milk from every source. Some may come from the udder itself, where they grow in the milk cisterns and ducts, but as these are always discharged in the first milk drawn from the animal, can be avoided by allowing the first few "draws" to go to waste upon the ground.

The greatest number of bacteria comes from the dust of the air, the dirt from the udder and flanks, from the milker and from unclean utensils.

IMPORTANCE OF CLEAN MILK TO THE CONSUMER.

The consumer is interested in clean milk primarily because no one cares to use a food which is not produced and handled under sanitary conditions. There is a more direct interest, however, because of the danger of contracting disease which may be communicated by this means. Serious epidemics of typhoid fever, septic sore throat, and other diseases have been disseminated through the milk supply. The weight of scientific evidence at the present time leads to the conclusion that tuberculosis may be transmitted from animals to human beings, particularly children, who consume raw milk containing tubercle bacilli.

Cleanliness is not an absolute safeguard against disease, but it is the greatest factor in preventing contamination. From the health standpoint there is great danger not only from the specific disease producing bacteria previously mentioned, but from milk that contains large numbers of miscellaneous bacteria which may cause serious digestive troubles, especially in infants and invalids whose diet consists chiefly of milk. There is also the minor consideration of the loss to the consumer from milk souring or otherwise spoiling before it can be used. The cleaner the milk, the longer it will keep good and sweet.

IMPORTANCE OF CLEAN MILK TO THE PRODUCER.

Clean milk not only benefits the consumer, but the milk producer who will consider this subject from an unbiased standpoint will find many ways in which he himself is benefited by producing clean milk. There are a number of items in this connection which, when considered alone, may seem unimportant, yet collectively they are of great importance. Moreover, they are not only of immediate value, but have a cumulative value reaching far into the future. Tuberculin testing, for example, is not only a safeguard to the purity of the milk supply for the consumer, but is a means of assisting the producer to protect his herd against future ravages of tuberculosis.

Most producers of market milk have experienced the chagrin of having a shipment of milk refused or returned because it reached the market sour, tainted, or otherwise in poor condition. Although such milk may be used for feeding pigs, it usually means a complete loss to the producer, as it costs too much to transport it back to the farm and because, depending on the market as an outlet for his milk, he has no means for utilizing small amounts at uncertain intervals. Another important consideration is the unpleasant effect upon the purchaser. Delivering sour or tainted milk usually results in losing the confidence of the dealer; or, if it is delivered direct to the consumer, it means the loss of good customers. A reputation for clean milk means fewer complaints, a better class of patrons, and a steady market for the product of the dairy.

Safeguarding the purity of the milk is a protection to health on the farm in several ways; first, the health of the farmer's family, who use a portion of the milk themselves; second, the health of the calves, which live largely on milk. Healthy cows to breed from and pure milk to feed upon are two important factors in rearing thrifty calves and in the development and maintenance of a healthy and profitable herd. Aside from these immediate and definite benefits there is another consideration, not immediately measurable but of vast influence, namely, the moral influence, for no one can learn to produce good and clean milk without learning good methods of care and management of the herd, and the study of these things leads to greater care and intelligence in the economic features of the business.

THE COST OF MILK.

There has been too much indifference on the part of consumers with respect to the cleanliness of milk; too many of them desire to buy milk at a low price and do not give any consideration to quality.

Dirty milk may prove expensive as a gift, while clean milk may be economical even at a high price; the cheapest article is often the most expensive. A higher price for clean milk may be a cheap insurance against some form of sickness. It is gratifying to note, however, an increasing demand for good, clean milk. This demand has resulted in more stringent regulations concerning the sanitary conditions associated with the milk supply. Compliance with these sanitary rules requires additional care, attention, and extra expense on the part of the producer of the milk, and while this expense may not be large, it is only fair that the consumer should pay his share of the cost of improving the quality of the milk. The consumer can not expect to purchase a clean, safe milk at the same price as a dirty milk which endangers the health of his family.

IMPORTED LADY.

Guernsey cow. Record 9,627 pounds milk and 536 pounds butter in one year. Has been grand champion cow at Spokane, Wash., and Salem, Oregon, fairs. Owned by A. J. Gile, Chinook, Wash.

A more serious consideration is the market increase in the cost of production which has resulted in recent years from feed and labor problems. This increase is in keeping with the increase in the cost of almost every commodity, and the consumer must expect to pay his portion of any legitimate increase in the cost of production occasioned by these conditions.

On the other hand, there is need of more attention to better management on the average farm devoted to the production of milk. The amount of milk produced per cow is frequently so low as to reflect seriously upon the business ability of the owner. A producer who makes no systematic effort to lower the cost of production by increasing the average production of milk per cow is entitled to little sympathy if he finds the business unprofitable. The profits yielded by a good cow often go to offset losses caused by poor cows in the same stable. The keeping of records of production of each individual in the herd, the elimination of unprofitable cows, the improvement of the herd through selection of the best producers and breeding them to a bull of dairy merit, and the selection of the best heifers from such breeding are necessary to put milk production on a sound basis. Unless the producer does these things he disregards the fundamental principles of business economy, and it is unreasonable for such a man to expect the consumer to pay him a profit on business practices which represent such economic waste. There is no good excuse for slack business methods on the dairy farm. Directions for keeping records of milk yields and cost of production are furnished by the Washington State College and by the Department of Agriculture."*

DAIRY INSPECTION.

It will be evident from the foregoing remarks that the duties of a dairy inspector cover a very broad field, and are very exacting and important. In order to be able to offer expert advice a thorough knowledge of milk, its formation, procurement and characteristics are necessary; likewise, a knowledge of conditions which have an influence upon milk while still in the animal body and the factors which change this food after it is taken from the cow, therefore our field inspection force consists of men especially qualified for the work at hand both by technical and practical training.

While the work as outlined in the statutes is of a regulatory nature and carries full police power, we have found through experience that more efficient inspection is possible through intelligent co-operation with the farmers themselves. So our work has been largely educational both with the producer and distributor. We find much of the poor milk is due to ignorance and not to any wilful intent.

During the period covered by this report there have been three dairy inspectors and one creamery inspector employed by the department, and while we have endeavored to carry our work into each of the thirty-nine counties of the state, we have found this to be physically impossible with this number of field men.

As a matter of economy and efficiency based upon experience it has appeared best to divide the state into five dairy districts. Each of these districts include several counties and are based upon the approximate number of dairy farms, population and transportation facilities.

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*Farmers Bulletin No. 602—U. S. Department of Agriculture.

Early in the biennium it was decided to have the inspectors visit each dairy farm of a county in their district before taking up the work in another county, and while this has been fairly successful, we have, on account of emergency complaints and other calls for assistance, been obliged to deviate from this fixed program.

The inspector in his work uses the score card system of rating dairy farms, which has been found to be one of the best methods of assistance both to the farmer and the inspector.

Each dairy is given a number on the score card and these cards are mailed to the Olympia office every week. The inspector has a map of each county and as fast as these dairy farms are visited he locates the farm on the map by recording the duplicate number appearing on the score card. These maps when completed contain the exact location of each dairy farm in a county, and are filed with the Department at Olympia.

During the period we have compiled complete maps of Whatcom, Snohomish, Thurston, Grays Harbor, Lewis, Pacific, Wahkiakum, Clarke and Cowlitz counties and find these very valuable as references. Maps are now being completed as fast as is consistent with good service of the other counties of the state. The reports indicate that our inspectors visited nearly 1200 dairies in Whatcom, seven hundred in Snohomish, and nine hundred in Lewis counties. It is hoped with additional assistance to have all the census maps compiled during the next two-year period.

In addition to the inspections of milk supplies for insanitary conditions, these inspectors, by reason of their training, are continually being called upon for information and advice relating to the various phases of dairy farming, such as correct and balanced rations, testing, breeding questions and proper markets. We have also co-operated with the State College in the organization of co-operative cow testing and other societies, and I would indeed feel that we have been remiss in our duty if the importance of this work, which means so much to the welfare of the dairy industry of Washington, was not mentioned and recognized in this report; therefore we are incorporating herewith a short article by O. E. Gibson, Dairy Field Agent of Extension Division, Washington State College, covering the organization of these associations, their results and value.

RECOMMENDATIONS.

Dairy farming is followed in greater or less degree on at least seventy-five per cent of the farms of the state. It is, however, more extensively developed as an industry in Western than in Eastern Washington, as is indicated in the accompanying tables, but in those counties east of the Cascade range it is becoming more and more prominent in their scheme of diversified farming.

The total value of dairy products sold as market milk and cream, condensed milk, butter and cheese, are shown herewith, and while these figures represent several million dollars they do not take into consideration the value of milk sold from one and two cow dairies or the value of the butter manufactured upon the farm and classified as dairy butter. The value resulting from an increased fertility of soil on account of dairy cows would, in my judgment, if it could be figured in dollars and cents, amount to fully as much as the returns received from these direct sales.

The opportunities and natural advantages for dairy farming in Washington are not exceeded by any other state of the Union, and it is to develop these possibilities and establish a profitable system of agriculture that our aims are directed.

Considering the importance of the development of the industry to the state, the total number of dairy farms, the character and value of the inspection service to the public health and the territory to be covered, it is respectfully recommended and urged that appropriation be made to cover five dairy inspectors and one creamery inspector. An increase of two men for whom there is urgent demand, based upon the growth and requirements of the industry at the present time, which are far greater than during the period when the employment of four inspectors was first authorized.

COW TESTING ASSOCIATIONS.

By O. E. Gibson, Dairy Field Agent, Extension Service, State College of Washington.

"It gives me great pleasure to submit for your approval the following brief summary of this branch of Dairy Extension work in which your department has so admirably assisted that of the Washington State College.

Statistics have proved that two-thirds of the cows in the United States are unprofitable. Experience has demonstrated the impossibility of distinguishing between profitable and unprofitable cows except by the continued use of the scales and Babcock test.

In order that records may be kept most economically and conveniently the Extension Department of the State College of Washington has been giving assistance wherever the demand has arisen, in the organizing of farmers' Co-operative Cow-Testing Associations.

Herd record books are furnished each member and a record is kept by the man employed to do the testing, of the product of each cow in the herd, together with the cost of production. The tester visits each member's farm one day in each month, records each cow's production in terms of milk and butter-fat, charges her up with the amounts of feed she has been receiving and makes a record of the profit or loss each cow returns.

It is both practical and desirable that dairymen weigh each cow's milk, night and morning continuously, but on the vast majority of farms this practice is deemed a burden. The association records taken for one day in each thirty do not give quite the accuracy in results which could be obtained by weighing the milk each day, however, in comparing yearly milk and butter-fat records made upon the same cows at the same time, are found to correspond very favorably.

Operating in this manner it is possible for one association to accommodate between twenty and thirty farmers having a total of from five to six hundred cows. The cost of keeping these records is $1.50 per cow per year. This money paid in to the association covers the cost of operating.

During the past year assistance has been given in organizing thirteen cow-testing associations located as follows:

Location	*No. Members*	*No. Cows Being Tested*
Pullman, Wn.	12	300 and under 350
Walla Walla, Wn.	25	500 and under 550
Enumclaw, Wn.	34	550 and under 600
Montesano, Wn.	29	600 and under 650
Duvall, Wn.	22	600 and under 650
Chehalis, Wn.	30	500 and under 550
Mount Vernon, Wn.	23	600 and under 650
Puyallup, Wn.	25	500 and under 550
Snohomish, Wn.	26	550 and under 600
Olympia, Wn.	38	550 and under 600
Sunnyside, Wn.	24	500 and under 550
Chimacum, Wn.	24	550 and under 600
Sequim, Wn.	26	500 and under 550

The results being obtained through cow-testing associations are proving highly satisfactory not only to dairymen themselves but to all who are interested in the advancement of the dairy industry.

Farm work, consisting as it does in large part of manual labor, is apt to become burdensome unless intelligent understanding is the guiding principle and a definite object is in view.

The monthly visit of the tester stimulates this interest and his work places the dairy herd on a business basis. Once real live interest is aroused many channels for betterment are opened, such as improved breeding, better dairy methods, increased dairy production, and finally the cow-testing movement, being an organized effort for improvement, is conducive to better community spirit.

Very respectfully,
(Signed) O. E. GIBSON,
Dairy Field Agent."

MARKET MILK AND CREAM.

By Marcus Dey, Dairy Inspector.

A review to date of the status of the dairy industry of the state from the standpoint of the public health, is exceedingly encouraging and one of which we may well be proud. While the advancement of the cause of pure dairy products has not been proportionately as rapid as it was ten years ago, when there was room for a great deal of improvement, it has been healthily steady.

The primal endeavor of this division has been to aid all those who are connected in any way with the production or handling of dairy products, in putting these products out in a safe, clean and uniform condition, and instruction has been made to take the place of police powers wherever possible, realizing that co-operation goes further than antagonism in getting desired results.

One phase of the problem which has seemed to warrant a great deal of attention, is the education of the consuming public to a proper appreciation of the value of high grade dairy products in order that those producing and handling these products may realize sufficient financial returns to permit of a continuation and an extension of their efforts in placing clean milk and cream on the market. The average consumer has very little knowledge of the cost of producing milk, and forgets that the price paid today for a quart of milk is but little more than the price of a quart of milk ten years ago, in spite of the fact that dairy feeds are very much higher in price and that modern sanitary methods and equipment add considerably to the cost of production. It is but reasonable to suppose that the consumer should be willing to pay more for the improved product of today, not only because of the increased cost of production, but for the value of milk and milk products, based upon the food value which they contain when compared with the relative cost of nutriment in other foods.

However, it is without the sphere of this division to interest itself in the price of milk and its products, but the division does feel that it would not be fulfilling its entire duty if it neglected to encourage the use of good dairy produce from an economic as well as from a health standpoint.

As intimated above, the division has carried on extensive field inspection of dairies, retailing or wholesaling milk or cream in the cities or towns over the state. A great deal of this inspection has been carried on in conjunction with the health departments of the larger cities. For the smaller towns milk ordinances have been submitted for adoption, in order to permit local authorities to improve their milk supplies.

Publicity has been given to milk and cream sanitation by newspaper articles, and addresses in public gatherings. A number of creameries have sent out circular letters to their patrons edited by the division, bearing on methods for the improvement of the cream supplies.

MILK AND CREAM CONTESTS.

One feature of the work of this division which has been fostered is that of the milk and cream scorings carried on in cities and creameries wherever the same have been adaptable. Within the past year assistance has been given to the health departments of Seattle, Tacoma and Everett in improving their milk supplies by means of the scorings mentioned above. In Seattle these scorings have been in the form of a contest since September, 1913, and the plan has resulted in the very material betterment of that city's milk.

In Tacoma and Everett these scorings have taken place periodically over the past year and have brought considerable improvement. In

Everett the division has been able to assist the local health department in the establishment of a milk laboratory, which is now in active work looking to a continued improvement of its supply.

Assisted by this division the health department of Seattle wrought a wonderful improvement in the sweet cream output of one of the cream stations supplying that city during the past year, by means of a cream scoring contest among the patrons of the creamery. Samples of each patron's cream were taken periodically and tested and scored for bacterial content, flavor and odor, dirt, per cent of butter-fat, acidity and temperature, which is quite similar to the basis upon which bottled milk in cities has been scored. After three examinations of the cream had been made prizes were given to the winners by the directors of the Creamery Association. The two outstanding results of this work are:

BONNIE ORMSBY LASS.

First prize and grand champion cow at the Panama Pacific International Exposition, San Francisco, California, 1915. Owned by Wm. Bishop, Chimacum, Wash.

First, the reduction in average bacterial content of all the cream from 2,813,407 per cubic centimeter, and, second, an increase in average score for flavor and odor from 16.11 to 21.43, a perfect score being 25 points.

It will be readily seen that such improvement is most desirable, because it means both a safer cream as well as one which is in greatest demand on the market.

This work was extended to another creamery which was making butter only and had not attempted to sell sweet cream, and has resulted in the adoption of a grading system for the cream supply and increased profit for those patrons shipping sweet cream.

These scoring contests have been of great value in many ways, the chief of which are:

First: The permanent improvement of the product by an appeal to the pride of the producer.

Second: The making possible of greater financial return for both wholesaler and retailer.

Third: Have brought about the output of a more uniform product, and,

Fourth: Accomplished more in less time than would field inspection alone.

(Signed) MARCUS DEY,
State Dairy Inspector.

CREAMERY INSPECTION.

There are one hundred and thirty-one creameries and eighteen cheese factories in the State of Washington, which have contributed in no small degree to the development of agricultural prosperity of the state.

The output of the creameries and cheese factories for the two-year period amounts to over 12 million dollars.

These creameries and cheese factories have principally been under the supervision of Mr. A. D. Fish, creamery inspector, but are also visited from time to time by the other inspectors in the course of their regular inspection trips.

The creamery inspectors' work, while of a regulatory nature, is largely educational and is intended to promote better methods in manufacturing and handling dairy products.

Its objects are two-fold: (1) To protect the public against the dangers resulting from wilful adulteration and insanitary conditions, and (2) to establish for Washington creamery butter and cheese a high standard of quality and purity.

Patrons of creameries are personally instructed in the care of cream and its various grades, the methods of testing in creameries are observed and instruction offered to the butter makers in the most improved and efficient methods.

Realizing that the development of the dairy industry in Washington is dependent upon satisfactory markets and that these markets depend upon the quality or standard of the products offered for sale, we have attempted, and with considerable success, to establish throughout the state a system of purchasing cream, for the manufacture of butter, on a quality basis.

Much of the poor butter manufactured in the state is due to the poor quality of cream delivered on the market, and while our dairy and creamery inspectors through personally conducted instructions, bulletins and other educational methods, have done effective work, we are unable to eliminate this poor butter without the co-operation of the creamery operators themselves. If the creamery men would pay for cream according to its true value there would be a rapid improvement in quality. Where the grading system is adopted it has proved of mutual advantage to the creameries and their patrons.

The following editorial published in the "Butter, Cheese and Egg Journal," Milwaukee, Wis., under date of June 14, 1916, is self-explanatory:

PACIFIC COAST STATES TO TRY GRADING.

"The Pacific Coast States, as dairy communities, are making every effort to profit by the experience of other dairy centers that have been longer in the business. A great step forward is being taken by the State of Washington, not alone in the agitation of buying cream by grade, but in actually putting the scheme into practice in many creameries throughout the State. And the creamery operators are enjoying the generous support of the State Agricultural Department, and the local press.

Too many patrons are misled by the impression that the quality of butter produced rests with the butter-maker, expecting him in many cases to make an A-No. 1 grade of butter from stale cream. And it is no easy matter to impress the patron with the fact that the grade or quality of cream rests largely in the care and proper handling which the cream receives while in his hands.

The system of grading as used by the Washington creameries, is something like the following:

First grade cream in the State of Washington is classed as cream that is clean, smooth, free from undesirable odors, sweet to the taste, or only slightly sour, and this receives the highest price for butter fat.

Second grade cream is cream that is too old or sour to grade as firsts, that contains undesirable flavors or odors in a moderate degree, and this grade is usually paid for at about 2 cents below grade number one.

Third grade cream is cream containing odors or flavors of onions, potatoes or other vegetables, also oil or kerosene, or is moldy or rancid. Such cream, of course, is by no means welcome, but to keep peace among the patrons, it is accepted where it is not worthless, and it is paid for at never more than five cents below first grade.

Quotations on cream are usually sent out as based on the first grade only, and the above will possibly be of value to any creamery deciding on instituting an arrangement for buying cream by grade, which is the only fair way of paying the producer, and the profitable way for the creamery. However, first grade cream should be sweet, otherwise the classification if followed strictly will result in a better product, if some of the concerns will not accept second grade cream and pay the highest price for it, and depend upon the renovating methods to improve the cream so the butter will be passable."

The farmer holds the key to the quality of the butter manufactured and the price received for the same. Good butter which brings top market prices can be made only from good cream and the quality of the cream in turn is controlled by the care it receives on the farm.

Every year at the State Fair in North Yakima we hold a scoring contest for market milk and cream, also for butter and cheese. Entries in these contests are made from all over the state and are of immense value as an educational measure. The scorings are made by experts in the service of the United States Department of Agriculture, who explain in detail their reasons for the scores. These contests establish a standard and are the means of demonstrating to the producer or manufacturer their weak points.

REPORT OF DAIRY INSPECTORS.

JULY 1ST, 1914, TO JUNE 30TH, 1916.

Marcus Dey, September 1, 1915, to June 30, 1916.
G. G. Carman, August 1, 1914, to June 30, 1916.
C. S. MacBride, May 1, 1915, to June 30, 1916.
I. J. Minnick, July 1, 1914, to April 1, 1915.
J. E. Harter, July 1, 1914, to March 1, 1915.
J. H. Martin, April 1, 1915, to May 1, 1915.
A. D. Fish, July 1, 1914, to June 30, 1916.

INSPECTIONS	Marcus Dey	G. G. Carman	C. S. MacBride	I. J. Minnick	J. E. Harter	J. H. Martin	A. D. Fish	Totals
Dairy inspections	522	2,939	1,924	509	1,043	84	594	7,615
Creamery inspections	18	61	4	6	29	5	167	290
Store and depot inspections	23	189	4	5	39	12	1,020	1,292
Cheese factory inspections	1	21	......	......	......	......	1	23
Condensed milk factory inspections	2	3	2	......	......	......	6	13
Samples of milk for butter fat	18	283	29	18	20	......	866	1,234
Samples of cream for butter fat	1	514	......	1	......	......	838	1,354
Samples of butter	3	11	2	......	8	......	90	114
Samples for bacteriological or chemical examinations	364	14	4	......	......	......	109	491
Milk cans inspected	1,751	3,558	1,884	273	928	97	8,094	16,585
Milk cans condemned	7	103	42	1	43	......	283	479
Wagon inspections	36	324	76	36	42	4	189	707
Milk train inspections	......	5	......	......	......	1	2	8
Complaints answered	9	82	2	5	31	......	94	223
Orders issued	266	208	717	236	49	2	254	1,732
Reinspections	49	238	47	1	140	11	301	787
Dairies, creameries, stores, depots and factories closed	813	44	135	6	2	......	50	1,050
Cows inspected	6,523	58	......	......	......	719	2	7,302
Arrests	1	10	......	6	11	......	7	35
Convictions	1	8	......	5	11	......	3	28
Fines	$20.00	$75.00	......	$5.00	$95.00	......	$70.00	$265.00

DAIRY ANALYSES BY STATE CHEMISTS.

By Profs. Elton Fulmer and Geo. Olson, Pullman, Wash. (State College).

BUTTER		MILK		CREAM	
Legal	Illegal	Legal	Illegal	Legal	Illegal
0	0	71	3	10	0

84 total analyses.

By Dr. C. W. Johnson, Seattle, Wash. (University).

BUTTER		MILK		CREAM	
Legal	Illegal	Legal	Illegal	Legal	Illegal
44	0	308	17	54	0

2 samples cheese (legal).
425 total analyses.
42 bacterial counts of milk.
136 bacterial counts of cream.

TOTAL PRODUCTION OF MILK AND CREAM BY COUNTIES.

FOR YEAR JULY 1, 1914, TO JUNE 30, 1915.

COUNTY	Gallons of Milk	Value of Milk	Gallons of Cream	Value of Cream	Total Value of Milk and Cream
Adams	10,897	$2,513 00	468	$554 00	$3,067 00
Benton	34,646	10,027 00	970	1,310 00	11,337 00
Grays Harbor	315,588	85,355 00	8,371	13,408 00	98,758 00
Chelan	87,446	30,028 00	9,027	15,537 00	45,565 00
Clallam	7,163	1,457 00	394	394 00	1,851 00
Clarke	121,276	37,858 00	4,373	6,110 00	43,968 00
Columbia	9,300	2,590 00	1,095	1,752 00	4,342 00
Cowlitz	51,970	13,666 00	810	1,196 00	14,862 00
Douglas	10,415	3,124 00	360	476 00	3,600 00
Ferry	7,842	3,083 00	306	552 00	3,635 00
Franklin	2,253	686 00	....	....	686 00
Garfield	4,975	1,717 00	25	30 00	1,747 00
Grant	5,840	2,219 00	71	96 00	2,315 00
Jefferson	51,301	15,903 00	22,254	44,546 00	60,449 00
King	4,727,538	1,592,656 00	319,391	433,916 00	2,026,572 00
Kittitas	82,779	25,424 00	3,869	4,773 00	30,197 00
Kitsap	182,650	56,655 00	5,803	7,131 00	63,786 00
Klickitat	28,295	7,313 00	246	394 00	7,707 00
Lewis	138,546	34,877 00	5,758	8,182 00	43,059 00
Lincoln	32,780	10,220 00	545	800 00	11,020 00
Mason	8,100	1,620 00	....	....	1,620 00
Okanogan	28,636	9,732 00	1,627	2,252 00	11,984 00
Pacific	96,410	25,551 00	2,583	4,105 00	29,656 00
Pend Oreille	14,700	5,010 00	368	522 00	5,532 00
Pierce	1,005,325	326,905 00	52,957	76,047 00	402,952 00
Skagit	176,310	48,011 00	4,326	6,415 00	54,426 00
Skamania	6,475	1,619 00	12	16 00	1,635 00
Snohomish	391,970	115,682 00	15,008	17,243 00	132,925 00
Spokane	1,711,879	690,388 00	153,432	253,688 00	944,076 00
Stevens	40,032	11,373 00	635	959 00	12,332 00
Thurston	109,443	30,690 00	4,078	5,161 00	35,851 00
Walla Walla	212,878	63,550 00	16,262	16,613 00	80,163 00
Whatcom	337,294	93,098 00	31,070	31,070 00	124,168 00
Whitman	122,378	31,055 00	8,508	10,647 00	41,702 00
Yakima	136,018	34,315 00	9,794	13,629 00	47,944 00
Totals	10,306,348	$3,425,970 00	683,786	$979,519 00	$4,405,489 00
Total export into Oregon produced in Washington	319,782	$53,423 00	3,702,433	$3,324,481 00	$3,377,904 00
Grand total	10,626,130	$3,479,393 00	4,386,219	$4,304,000 00	$7,783,393 00

TOTAL PRODUCTION OF MILK AND CREAM BY COUNTIES.

JULY 1, 1915, TO JUNE 30, 1916.

COUNTY	Gallons of Milk	Value of Milk	Gallons of Cream	Value of Cream	Total Value of Milk and Cream
Adams	16,233	$4,789 00	512	$713 00	$5,502 00
Benton	34,765	8,354 00	1,075	1,487 00	9,841 00
Chelan	97,313	30,397 00	9,321	11,514 00	41,911 00
Clallam	8,337	2,271 00	545	553 00	2,824 00
Clarke	105,995	30,517 00	7,535	11,808 00	42,325 00
Columbia	11,000	3,300 00	1,080	1,728 00	5,028 00
Cowlitz	53,310	14,719 00	1,364	1,883 00	16,602 00
Douglas	9,125	2,920 00	550	880 00	3,800 00
Ferry	12,245	4,692 00	845	1,504 00	6,196 00
Franklin	40,255	14,062 00	1,320	2,121 00	16,183 00
Garfield	1,800	540 00	25	40 00	580 00
Grant	13,010	4,484 00	755	896 00	5,380 00
Grays Harbor	416,139	120,897 00	13,226	17,583 00	138,480 00
Jefferson	61,844	18,037 00	2,965	5,687 00	23,724 00
King	5,042,062	1,589,764 00	324,451	531,746 00	2,121,510 00
Kitsap	152,860	48,489 00	4,433	8,978 00	57,467 00
Kittitas	155,071	49,297 00	4,342	6,084 00	55,381 00
Klickitat	16,710	4,584 00	319	464 00	5,048 00
Lewis	156,261	42,502 00	5,654	7,987 00	50,489 00
Lincoln	26,817	7,961 00	1,123	1,665 00	9,626 00
Mason	8,650	2,200 00	80	98 00	2,298 00
Okanogan	25,298	8,171 00	2,113	2,449 00	10,620 00
Pacific	115,360	31,451 00	2,389	3,719 00	35,170 00
Pend Oreille	20,030	6,916 00	510	736 00	7,652 00
Pierce	986,652	311,014 00	53,787	69,992 00	381,006 00
Skagit	142,441	40,975 00	3,796	4,557 00	45,532 00
Skamania	1,575	383 00	205	208 00	591 00
Snohomish	632,140	179,593 00	19,725	24,506 00	204,099 00
Spokane	2,121,663	780,239 00	204,997	278,507 00	1,058,746 00
Stevens	29,665	9,044 00	715	1,094 00	10,138 00
Thurston	119,849	36,226 00	10,716	14,052 00	50,278 00
Walla Walla	213,635	63,409 00	17,337	17,737 00	81,146 00
Whatcom	338,300	113,427 00	58,140	62,529 00	175,956 00
Whitman	118,684	33,851 00	7,998	12,467 00	46,318 00
Yakima	132,479	38,822 00	14,017	18,704 00	57,526 00
Totals..........	11,437,513	$3,658,297 00	777,965	$1,126,676 00	$4,784,973 00
Total export into Oregon produced in Washington	606,476	86,508 63	2,346,054	2,228,571 30	2,315,074 93
Grand totals..	12,043,989	$3,744,800 63	3,124,019	$3,355,247 30	$7,100,047 93

BUTTER PRODUCTION IN STATE BY COUNTIES.

DURING YEAR JULY 1, 1914, TO JUNE 30, 1915.

COUNTY	Pounds of Butterfat Used	Pounds of Butter Made	Value of Butter	Pounds of Butter Exported
Adams	17,611	21,156	$7,284 00	....
Benton	71,074	84,980	24,982 00	....
Chelan	6,407	7,473	2,242 00	....
Clallam	751,824	927,143	268,967 00	....
Clarke	198,455	245,280	75,720 00	8,347
Cowlitz	179,583	217,146	65,144 00	44,983
Ferry	104,142	126,374	37,912 00	40,025
Grays Harbor	339,437	416,025	119,989 00	....
Island	200,425	248,985	75,235 00	....
Jefferson	247,833	310,254	93,441 00	....
King	2,994,112	3,720,672	1,136,519 00	1,135,652
Kittitas	587,588	673,979	202,463 00	6,519
Kitsap	135,761	163,644	51,253 00	....
Klickitat	74,181	92,928	28,352 00	50,000
Lewis	692,264	898,660	268,597 00	....
Mason	56,827	69,484	17,507 00	....
Okanogan	267,772	323,025	95,444 00	11,177
Pacific	1,620	1,897	616 00	....
Pierce	1,168,337	1,400,290	433,497 00	45,000
San Juan	148,168	170,758	51,226 00	....
Skagit	398,877	457,595	152,978 00	10,223
Snohomish	1,146,394	1,404,937	428,076 00	20,638
Spokane	1,261,007	1,585,320	481,258 00	3,278
Stevens	56,851	68,284	19,654 00	9,909
Thurston	333,863	409,250	128,790 00	18,720
Wahkiakum	234,865	290,826	86,643 00	246,169
Walla Walla	623,853	748,649	287,462 00	131,888
Whatcom	1,444,238	1,756,104	581,289 00	52,407
Whitman	140,049	173,211	52,306 00	....
Yakima	1,208,168	1,478,031	443,588 00	....
Totals........................	15,020,586	18,484,255	$5,668,434 00	1,834,865
NOTE.—969,058 gallons of sour cream produced in this state, was imported by Oregon and made into butter by Oregon creameries. Value			478,340 60	
Total for period............			$6,146,774 60	

BUTTER PRODUCTION IN STATE BY COUNTIES.

DURING YEAR JULY 1, 1915, TO JUNE 30, 1916.

COUNTY	Pounds of Butterfat Used	Pounds of Butter Made	Value of Butter	Pounds of Butter Exported
Adams	1,500	1,608	$516 00	....
Benton	189,871	224,220	62,457 00	....
Chelan	19,596	24,173	6,939 00	....
Clallam	728,963	906,274	268,306 00	....
Clarke	248,607	310,077	92,856 00	7,689
Cowlitz	177,542	276,127	48,642 00	14,000
Ferry	79,435	98,895	29,668 00	....
Grays Harbor	172,848	216,826	64,048 00	....
Island	182,888	228,397	65,344 00	....
Jefferson	215,471	266,380	80,762 00	....
King	3,191,129	3,861,981	1,226,194 00	717,000
Kitsap	167,946	210,215	60,308 00	798
Kittitas	500,280	609,716	176,483 00	6,094
Klickitat	91,610	113,731	33,884 00	81,800
Lewis	597,826	740,061	218,362 00	....
Mason	54,635	67,132	20,140 00	....
Okanogan	103,827	120,962	40,333 00	....
Pend Oreille	39,408	48,749	14,675 00	2,730
Pierce	981,739	1,144,078	344,509 00	75,000
San Juan	21,054	25,617	7,127 00	....
Skagit	584,389	620,032	208,836 00	....
Snohomish	1,307,988	1,592,968	482,785 00	28,532
Spokane	1,487,548	1,856,870	541,202 00	115,140
Stevens	76,896	91,811	24,085 00	5,837
Thurston	390,278	477,078	149,090 00	21,840
Wahkiakum	125,262	161,993	44,196 00	92,000
Walla Walla	613,118	738,187	219,721 00	153,609
Whatcom	1,412,011	1,737,958	519,176 00	20,731
Whitman	133,975	163,257	48,151 00	28,450
Yakima	1,183 704	1,399,136	406,745 00	3,630
Totals	14,981,285	18,338,474	$5,500,540 00	1,374,880
NOTE.—530,798.5 gallons of sour cream produced in this state was exported to Oregon creameries and made into butter. Value			333,278 26	
Total value for period			$5,833,818 26	

CHEESE MADE IN STATE BY COUNTIES.

DURING THE YEAR JULY 1, 1914, TO JUNE 30, 1915.

COUNTY	Pounds	Value
Clarke	240,856	$33,938 00
Cowlitz	67,767	9,488 00
Grays Harbor	58,097	7,553 00
Jefferson	208,580	30,609 00
Lewis	5,076	762 00
Pacific	124,808	31,201 00
Snohomish	138,685	35,709 00
Whatcom	221,712	38,217 00
Totals	1,065,076	$187,477 00

CHEESE MADE IN STATE BY COUNTIES.

DURING THE YEAR, JULY 1, 1915, TO JUNE 30, 1916.

COUNTY	Pounds of Cheese Made	Value
Clarke	129,984	$19,904 00
Cowlitz	24,040	4,100 00
Grays Harbor	223,226	34,240 00
Jefferson	223,228	31,526 00
Lewis	3,335	513 00
Pacific	122,298	18,345 00
Skagit	284,774	38,314 00
Snohomish	278,055	42,453 00
Whatcom	49,421	7,570 00
Whitman	150	30 00
Yakima	7,572	1,136 00
Totals	1,346,083	$198,031 00

CONDENSED MILK PRODUCED IN STATE.

During the Year Ending June 30, 1915.

Pounds of Whole Milk Used	*Cases Produced*	*Value*	*Cases Exported*
185,795,817	1,926,809	$5,618,050,00	1,046,679

CONDENSED MILK PRODUCED IN STATE.

For the Year Ending June 30, 1916.

Pounds of Whole Milk Used	*Cases Produced*	*Value*	*Cases Exported*
178,162,876	1,896,829	$6,252,893.00	1,444,404

TOTAL VALUE OF DAIRY PRODUCTS IN STATE.

Period July 1, 1914, to June 30, 1916.

Milk and cream	$14,883,440 93
Condensed milk	11,870,943 00
Butter	11,980,592 86
Cheese	385,508 00
Total	$39,120,484 79

LIVESTOCK SANITATION.

The livestock industry of Washington represents an investment of over forty-seven million dollars ($47,000,000.00).

Classes and value of livestock in the State of Washington for the year 1916:

Livestock in State of Washington.

HORSES.

	Number	*Value*
One year old	26,272	$923,859 76
Two years old	25,554	1,335,613 68
Three years and over	44,804	3,129,025 76
Work horses	156,547	16,233,399 68
Stallions	1,105	393,036 76
Mules and asses	16,682	1,892,406 12
Total	270,964	$23,907,341 76

CATTLE.

Yearlings	119,657	$2,310,966 28
Two years old	74,417	2,460,321 92
Three years old and over	60,807	2,801,832 80
Milch cows	191,822	11,269,455 48
Bulls	7,917	484,555 20
Total	454,620	$19,327,131 68

SHEEP AND GOATS.

Stock sheep and goats	493,578	$2,644,925 17
Sheep bucks for breeding purposes	8,574	76,494 68
Total	502,152	$2,721,419 85

HOGS.

Hogs	156,338	$1,201,478 36
Value		$47,157,371 65

During the year of 1915 there were four hundred sixty thousand (460,000) fleeces, or three million eight hundred eighteen thousand (3,818,000) pounds of wool, produced in the State of Washington.

The development of the livestock industry in Washington is receiving more attention than in the past, due principally to a realization by our farmers that the introduction of livestock as a factor in diversified farming, is essential to a sound agricultural economy. The Boys' and Girls' Pig Clubs, organized under the auspices of the Extension Division of the Washington State College, have contributed in no small degree to this development. The various livestock organizations have been unusually active during the past biennium and the results of their endeavors are plainly seen. Other agencies such as the transportation companies and banking associations have all contributed their quota until it now appears that this state can boast of some of the finest and largest herds of pure bred animals in the entire country.

JOHANNA McKINLEY SEGIS, NO. 44367.

He is a son of the world's famous King Segis, No. 36168, and the 40-pound cow, Johanna De Kol Van Beers, No. 75131, whose 120-day record of 531 pounds butter stood as a world's record for a number of years.

His wonderful conformation is very noticeably imparted to his offspring, also his producing qualities as is shown by his fine list of 34 tested daughters, one having a 33-pound record, thirteen others from 20 to 29.35 pounds butter in seven days. His entire list of tested daughters, at an average age of 3 years, 17 days, have records that average 19.55 pounds butter, 424.80 pounds milk and 3.68 per cent of fat. In this list of daughters, only four were full aged and but two were over four years old, leaving the other twenty-eight from 23 months to 3½ years of age.

Owned by Carnation Stock Farms, Seattle.

At the San Francisco Exhibition in 1915, the State of Washington distinguished itself by the many awards won in the livestock classes.

The Livestock Division, which has endeavored to encourage our farmers in the production of a better class of livestock through the use of pure bred sires and in the practice of good breeding methods, is primarily concerned in the health of our herds and flocks, for if these are to be annually devastated by such plagues as foot-and-mouth disease, tuberculosis, anthrax, glanders, sheep scab, etc., our agricultural prosperity will be undermined and dwarfed for all time to come.

BOVINE TUBERCULOSIS.

Bovine tuberculosis still continues to be the principal sanitary problem with which this division has to deal, and while the disease is not so prevalent in this state as compared to many others, due to our geographical situation and our stringent laws governing the importation of livestock, it still assumes proportions in some counties that materially decrease the profitable returns of many farms.

It is still to be regarded as the most disastrous disease of cattle and a menace of such economic importance that it can not be ignored by either the herd owners or the interests involved in the conservation of agricultural resources and the protection of public health. Every animal slaughtered and found unfit for food, is a direct tax on the public meat supply. Every cow which is removed from the milking string on account of tuberculosis, adds to the cost of milk production.

During the year of 1915 there were in the United States 32,644 entire carcasses and 48,401 parts of carcasses of cattle; 66,023 entire carcasses and 439,915 parts of carcasses of swine condemned by the federal meat inspectors as unfit for food on account of tuberculosis. The recent report of the United States Department of Agriculture places the annual loss from this disease at $25,000,000.

Ever since the discovery of tuberculin by Prof. Robt. Koch in 1890 the subject of tuberculin testing of cattle as the principal method of controlling and eradicating tuberculosis has been a leading topic for discussion, both with investigators as well as laymen.

The investigations carried out by scientists in the study of this disease have been extremely numerous and important in their results, and the consensus of opinion as expressed in the report of the International Commission is that "the tuberculin test is the fundamental factor in any policy having for its object the control of bovine tuberculosis."

Much of the opposition to the tuberculin testing of cattle is due to the unfortunate attempts by some states to control the disease through the adoption of radical and harsh measures. These measures developed a spirit in the contests that followed which made it extremely difficult to obtain a dispassionate and impartial consideration of the measures that were required to relieve our farmers from the losses which they were suffering because of this disease. Any policy involving the eradication of a disease so widely disseminated, and one which causes such serious losses to the animal industry, should provide some measure of financial assistance by the state in order to relieve the burdens which fall upon the owners of livestock.

In former years there were few advocates of the test among the stockmen of this state, and therefore the work of eradication was very much retarded, but as the good results became apparent, the usefulness of the test was admitted by intelligent, progressive men until now many of those who were formerly skeptical and suspicious are advocating its use as one of the principal factors in the advancing progress of the dairy industry.

The division has done much in an educational way through public demonstrations, lectures, etc., in acquainting the farmers with the character of tuberculosis, the means by which it is spread, and the measures necessary in its control. The farmers have been told that this problem of eradication is in a large measure their own and that they must realize that the healthy cow is the essential foundation of a herd; that the state is not in the livestock insurance business, and that true co-operation is necessary if satisfactory results are to be expected. We can state with pride that we have always found the majority of dairymen and farmers anxious to assist in the control of bovine tuberculosis under a reasonable and fair law, and in order to verify this statement we desire to respectfully direct your attention to the published tables of results made possible only through the enactment of Chapter 100, Laws 1915.

SUMMARY OF TESTS PREVIOUS TO CREATION OF THE STATE DEPARTMENT OF AGRICULTURE.

	No. Herds Tested	*No. Animals Tested*	*No. Reacting*
1895- 6	3	28	1
1896- 8	1	16	5
1898-00	9	40	8
1900-02	14	387	71
1902-04	36	340	40
1904-06	97	1,456	268
1906-08	115	2,828	352
1908-10	316	9,310	1,317
1910-June 10, 1913, no report			
TOTALS		14,405	2,062

TUBERCULIN TESTS UNDER STATE DEPARTMENT OF AGRICULTURE.

	No. Animals Tested	*No. Reacting*
June 10, 1913-June 30, 1914	6,562	349
July 1, 1914-June 10, 1915	11,280	1106

TESTS UNDER THE PROVISIONS OF CHAPTER 100, LAWS 1915.

	Tested	*Reacting*
June 10, 1915-June 30, 1916	28,930	1,954

Previous to June 10, 1915, no remuneration was allowed owners of cattle for animals found to be tubercular, therefore many were timid about having their herds tested, being afraid of financial disaster.

The enactment of Chapter 100, Laws of 1915, appropriating $25,000.00 and providing for the compensating of owners for a portion of their losses through bovine tuberculosis, has been a very popular measure, and has had the endorsement of the State Grange, the Washington Pure Bred Livestock Association and various other livestock organizations as well as all public health officials. The present law provides, on the written application of the owner of any bovine animal, the tuberculin test will be applied by one of the inspectors of the Department. This inspector is a duly qualified veterinarian employed by the Department and who has given a bond to the state in the sum of $2000.00.

Upon the completion of the test, if any tubercular animals are found, there are two courses open for the owner. He may select indemnity or quarantine. In case indemnity is selected, the reactors are appraised by the inspector and owner. In their failure to agree upon a value of the animals in question, the county agriculturist of the county is called upon to settle the matter. In case there is no county agriculturist of that county, the judge of the Superior Court of that county appoints a third appraiser. It is worthy of note that in testing more than 28,000 cattle, and in slaughtering 1842 "reactors," the confidence of the owners in the fairness of the inspectors is shown by the fact that a third appraiser has been necessary in but two instances.

As many cattle slightly affected with tuberculosis, in certain forms, are considered wholesome for meat, the cattle are slaughtered under the supervision of the inspector, who is guided in his decision as to passing the carcass for food or condemning it as inedible, by the meat inspection regulations of the Bureau of Animal Industry of the United States Department of Agriculture.

The carcasses are then sold to the best advantage and the proceeds of the sale remitted to the owner. If the proceeds of the sale do not equal the appraised valuation of the animal, the owner receives from the Department of Agriculture the difference between the proceeds of the sale and the appraised value. In no case, however, can the owner receive an amount from the Department that will make the amount received by the owner of a reacting animal, which upon post-mortem examination shows lesions of tuberculosis, more than $35.00. On the other hand, if no lesions of the disease are found, the Department shall pay the difference between the proceeds of the sale and the appraisement, but this payment is limited so that the owner shall not receive more than $75.00 for the total proceeds of any one animal.

The wonderful accuracy of the tuberculin test is shown in the following tables, where it will be noted that of a total of 1842 animals killed, 1790 showed upon post-mortem examination, evidences of the disease. When we consider that a few of these animals come under that class called "suspects," i. e., in which the reaction is not clearly defined, the results are truly remarkable.

SUMMARY OF TUBERCULIN TESTS.

PERIOD JULY 1, 1914, TO JUNE 10, 1915.

COUNTY	Number Animals Tested	Number Healthy	Number Reacted	Number Sus-pects	Number Quar-antined	Number Slaugh-tered	Number Herds Tested	Number Herds Free From Tubercu-losis	Number Herds Infected With Tubercu-losis
Adams	62	62	....	....	....	....	4	4	....
Asotin	....	....	....	....	....	....	....	....	....
Benton	1	1	....	....	....	....	1	1	....
Chelan	15	15	....	....	....	....	1	1	....
Clallam	....	....	....	....	....	....	....	....	....
Clarke	628	595	33	2	3	30	23	8	15
Columbia	....	....	....	....	....	....	....	....	....
Cowlitz	80	79	1	....	....	1	2	1	1
Douglas	....	....	....	....	....	....	....	....	....
Ferry	....	....	....	....	....	....	....	....	....
Franklin	....	....	....	....	....	....	....	....	....
Garfield	5	....	5	....	2	3	1	....	1
Grant	11	10	1	....	....	1	4	3	1
Grays Harbor	....	....	....	....	....	....	....	....	....
Island	....	....	....	....	....	....	....	....	....
Jefferson	119	118	1	....	....	1	3	2	1
King	1,161	1,076	82	3	1	81	43	17	26
Kitsap	....	....	....	....	1	....	....	....	....
Kittitas	179	164	15	....	2	13	13	6	7
Klickitat	....	....	....	....	....	....	....	....	....
Lewis	27	24	3	....	1	2	3	....	3
Lincoln	....	....	....	....	....	....	....	....	....
Mason	6	6	....	....	....	....	1	1	....
Okanogan	....	....	....	....	....	....	....	....	....
Pacific	88	88	....	....	....	....	1	1	....
Pend Oreille	....	....	....	....	....	....	....	....	....
Pierce	3,592	2,728	864	....	30	834	121	45	76
San Juan	....	....	....	....	....	....	....	....	....
Skagit	121	104	17	....	....	17	6	1	5
Skamania	....	....	....	....	....	....	....	....	....
Snohomish	1,305	1,296	9	....	....	9	132	127	5
Spokane	724	697	27	....	....	27	38	24	14
Stevens	44	44	....	....	....	....	1	1	....
Thurston	450	437	13	....	4	8	9	6	3
Wahkiakum	....	....	....	....	....	....	....	....	....
Walla Walla	615	610	5	....	....	5	35	32	3
Whatcom	282	280	2	....	....	2	6	5	1
Whitman	701	695	6	....	....	6	27	21	6
Yakima	1,064	1,042	22	....	....	22	38	26	12
Totals	11,280	10,160	1,100	5	44	1,068	518	338	180

TABLE NO. 1—SUMMARY, TUBERCULIN TESTS.

JUNE 10, 1915, TO JUNE 30, 1916.

COUNTY	Number Tested	Number Healthy	Number Diseased	Number in Quarantine	Number Slaughtered	Number Slaughtered With Appraisals	Number Cows Not Showing Lesions	Number Herds Tested	Number Healthy Herds
Adams	85	85	....	....	....	....	....	5	5
Benton	906	879	27	....	27	26	1	116	104
Chelan	41	36	5	....	5	4	....	2	....
Clarke	1,396	1,256	140	2	138	124	15	81	58
Columbia	1	....	1	....	1	....	....	1	....
Ferry	3	....	3	3	....	....	....	1	....
Grant	15	14	1	....	1	1	....	1	....
Grays Harbor	1,426	1,393	33	....	33	31	1	79	61
Island	20	20	....	....	....	....	....	5	5
Jefferson	255	246	9	....	9	7	....	8	3
King	4,681	4,250	431	57	374	336	5	556	454
Kitsap	80	70	10	....	10	10	....	8	7
Kittitas	180	168	12	....	12	10	....	11	8
Lewis	450	438	12	2	10	10	....	26	23
Lincoln	130	125	5	....	5	1	....	3	1
Okanogan	327	325	2	....	2	1	....	45	43
Pacific	97	97	....	....	....	....	....	6	6
Pierce	5,565	5,033	532	2	530	457	2	464	371
Skagit	642	535	107	....	107	106	12	29	15
Snohomish	4,687	4,436	251	8	243	240	3	402	342
Spokane	3,343	3,175	168	....	168	158	1	218	187
Thurston	1,039	1,023	16	....	16	14	2	48	38
Wahkiakum	355	316	39	33	6	6	....	15	9
Walla Walla	633	629	4	....	4	3	2	44	41
Whatcom	951	881	70	1	69	65	....	39	34
Whitman	488	442	46	....	46	41	7	24	19
Yakima	1,134	1,104	30	4	26	23	1	55	42
Totals	28,930	26,976	1,954	112	1,842	1,669	52	2,292	1,871

TABLE NO. 2.—SUMMARY, TUBERCULIN TESTS.

JUNE 10, 1915, TO JUNE 30, 1916.

COUNTY	Number Reacting Animals Slaughtered With Appraisals	Number Passed for Food	Number Condemned	Total Appraised Value	Amount Realized from Sale of "Passed" Animals	Amount Realized from Sale of "Condemned" Animals	Amount Indemnity Paid by State on "Passed" Animals	Amount Indemnity Paid by State on "Condemned" Animals	Total Amount Indemnity Paid by State
Adams									
Benton	26	7	19	$743 00	$176 72	$75 56	$46 70	$468 54	$515 24
Chelan	4		4	80 00		18 70		61 30	61 30
Clarke	124	79	45	3,844 00	2,054 00	140 47	570 09	1,300 09	1,870 18
Columbia									
Ferry									
Grant	1		1	30 00		5 70		24 30	24 30
Grays Harbor	31	7	24	883 00	101 67	96 92	76 08	567 08	643 16
Island									
Jefferson	7	3	4	225 00	55 50	10 00	49 50	110 00	159 50
King	336	224	112	10,369 08	5,456 07	284 76	1,902 95	3,669 52	5,572 47
Kitsap	10	6	4	207 00	87 58	36 47	19 95	65 53	85 48
Kittitas	10	5	5	252 00	136 00	21 00	11 00	94 00	105 00
Lewis	10	7	3	350 00	180 95	18 00	64 05	87 00	151 05
Lincoln	1	1		35 00	38 00				
Okanogan	1	1		30 00	15 00		15 00		15 00
Pacific									
Pierce	457	265	192	14,518 00	10,068 51	861 00	706 92	5,290 00	5,996 92
Skagit	106	69	37	3,369 50	1,301 79	97 48	1,068 67	941 52	2,010 19
Snohomish	240	133	107	5,675 50	2,884 18	260 06	769 87	2,231 76	3,002 63
Spokane	153	92	61	4,433 06	4,781 99	284 29	25 80	1,395 71	1,421 51
Thurston	14	5	9	415 00	118 79	35 00	46 21	215 00	261 21
Wahkiakum	6	6		167 00		15 51		151 49	151 49
Walla Walla	3	3		142 50	79 20		80 00		80 00
Whatcom	65	18	47	1,886 50	849 72	228 48	124 24	1,251 06	1,375 30
Whitman	41	40	1	1,420 00	1,600 00	6 00		14 00	14 00
Yakima	23	12	11	583 00	856 80	24 20	91 20	190 80	282 00
Totals	1,669	983	686	$49,608 12	$29,791 42	$2,468 60	$5,668 23	$18,128 70	$23,797 93

TABLE NO. 3.—SUMMARY, TUBERCULIN TESTS.

JUNE 10, 1915, TO JUNE 30, 1916.

COUNTY	Per-centages of Reactors	Average Appraisal	Percentage Passed for Food	Average Amount Received from Sale of "Passed" Reacting Animals	Average Amount Received from Sale of "Con-demned" Reacting Animals	Average Amount Indemnity Paid by State on "Passed" Animals	Average Amount Indemnity Paid by State on "Con-demned" Animals	Average Amount Indemnity Paid by State
Adams	......	......	......	......	......	......	......	......
Benton	2.98%	$28 61	26.92%	$25 24	$3 97	$6 67	$24 66	$19 81
Chelan	12.19%	20 00	......	......	4 67	......	15 32	15 32
Clarke	10.02%	31 01	63.71%	28 53	3 12	7 22	28 89	15 08
Columbia	100.00%	No appraisal		......	......	......	......	......
Ferry	100.00%	In quarantine		......	......	......	......	......
Grant	6.67%	30 00	......	......	5 70	......	24 30	24 30
Grays Harbor	2.32%	26 87	22.58%	14 52	8 99	10 87	23 62	20 74
Island	......	......	......	......	......	......	......	......
Jefferson	3.53%	32 14	57.14%	18 50	2 50	16 50	27 50	22 78
King	9.12%	30.89	66.67%	24 31	2 12	8 57	32 88	16 68
Kitsap	12.50%	20 70	60.00%	14 59	9 12	3 32	16 38	8 55
Kittitas	6.66%	25 20	50.00%	27 20	4 20	2 20	18 80	10 50
Lewis	2.67%	35 00	70.00%	25 85	6 00	9 15	29 00	15 11
Lincoln	3.85%	35 00	100.00%	38 00	......	......	......	......
Okanogan	0.62%	30 00	100.00%	15 00	......	15 00	......	15 00
Pacific	......	......	......	......	......	......	......	......
Pierce	9.56%	31.75	57.98%	38 00	4 53	2 63	27 55	13 12
Skagit	16.66%	31.78	64.48%	18 87	2 90	15 48	25 44	18 78
Snohomish	5.35%	23 64	55.42%	21 31	2 43	5 79	20 87	12 51
Spokane	5.07%	29 00	59.83%	52 26	4 61	0 28	22 89	9 35
Thurston	1.38%	29 63	35.71%	23 76	3 88	9 24	23 88	18 65
Wahkiakum	10.98%	27 83	......	......	2 58	......	25 25	25 25
Walla Walla	0.64%	47 50	100.00%	26 40	......	26 67	......	26 67
Whatcom	7.36%	29 02	27.69%	17 43	4 86	6 90	26 62	21 02
Whitman	9.85%	34 63	97.58%	40 00	6 00	......	14 00	14 00
Yakima	2.64%	25 35	52.17%	29 73	2 20	7 60	17 34	12 26

RECOMMENDATIONS.

Unfortunately the division was obliged to suspend the tuberculin test work on July 1st, as there was only a small balance remaining in the fund, and consequently hundreds of cattle owners were notified that their applications could not be acted upon.

FORWARD SOMERSET DUCHESS, NO. 167221.

At the age of four years, 28 days, she made the remarkable world's record of 28,448 pounds milk in one year, testing 1,019 pounds butter. This record was strictly official for the entire 365 days. During her best seven days of this test, she produced 725 pounds milk and 28.30 pounds butter.

The photograph shown above was taken at the completion of her yearly test, and shows a remarkably well developed udder and general conformation.

A tabulated record of her performance follows:

No. Days	*Milk*	*Butter*
7	725.4	28.30
30	2,840.1	106.15
60	5,699.5	203.02
90	8,547.4	298.68
180	16,528.8	575.10
365	28,448.1	1,019.41

Owned by Carnation Stock Farms, Seattle.

The test work on July 1st was in full swing as a result of our educational program and the fair and liberal provisions of the Act, and great enthusiasm existed among the dairymen; so it was with feelings of profound regret that this work was suspended.

As previously stated, the work has had the endorsement of the leading livestock associations and other organizations, and if this record is to serve as a criterion of what we may expect to do in the future it naturally follows that greater demands will be made upon this department for the betterment of the livestock industry of the

state. Therefore, it is urgently recommended that not less than $100,000.00 be appropriated for the enforcement of Chapter 100, Laws 1915, during the next biennium.

We take no hesitancy in saying that with this amount of money we can practically eradicate bovine tuberculosis from Washington, as we now know, as a result of past work, where the infected districts are, and can confine our principal efforts at those points.

It will be noted that in the fight for the healthy cow as regards bovine tuberculosis, the question has been treated by the Department principally from an economic basis, and while the question is one that the stockmen must face from this point of view, there is another side that concerns the public—that of the public health. The health officers of many of our municipalities are now demanding certificates of health for the dairy herds supplying their cities with milk. The Department is lending its aid in each case by testing these herds free of charge.

RESOLUTION ADOPTED BY THE CONVENTION OF MILK PRODUCERS AND OTHER DAIRY INTERESTS OF THE UNITED STATES AT WASHINGTON, D. C., MAY 5 AND 6, 1916.

WHEREAS, the presence of tuberculosis in cattle is a menace to the profit of the breeder and the dairy farmer; and,

WHEREAS, its presence in the herd can, as a rule be detected by the application of the tuberculin test by men skilled in its use and when administered under proper conditions.

Resolved, That this convention urges breeders and handlers of all classes of dairy cattle to weed out reactors from their herds as a matter of protection to their own financial interests, either consigning them to the butcher or segregating them in the herd, when they are of sufficient value to warrant such manner of handling;

Resolved, That this convention heartily endorses the State-accredited herd plan of inducing breeders voluntarily to offer their herds for official test and secure a certificate which will accredit their cattle to any State without retest;

Resolved, That reasonable compensation should be allowed by Federal and State authorities for all animals slaughtered in the eradication of tuberculosis. This compensation should not be arbitrarily limited by the statute, but should be fixed by appraisal in each case, or by court decision on proof of the value of the slaughtered animals.

PURE BRED ACCREDITED HERD PLAN.

The Department has under consideration a plan to recognize tuberculosis-free pure-bred herds through the accredited system. This system is based upon the fact that the intending purchaser of cattle, to protect his herd from this disease, should deal with the healthy herd as a unit instead of the individual animal, as it has long been recognized that incipient cases of tuberculosis may fail to give a reaction to the test. These animals may later develop the disease and introduce the infection into a herd. In the case of a purchaser securing a few animals from a breeder it has been the practice in many instances to have only those few animals tested. Such a method does not show the condition of the balance of the herd, and often the integrity of the examining veterinarian is questioned. If those animals which passed upon his certificates later develop the disease, the blame is heaped upon the veterinarian, the purchaser oft times failing to take into consideration that the disease did exist in the herd.

From the breeder's standpoint there will be much to be gained in co-operation with the Department in this matter. For instance, it is now necessary to employ a veterinarian every time a few cattle are sold, and the cost is considerable in many cases. Through the accredited plan system a certificate can be issued from this office, provided always, of course, that we have found that the herd has been maintained free from tuberculosis. This will obviate the necessity of testing immediately prior to shipment. The United States Department of Agriculture has had this system under trial, and it is believed that our state can co-operate with them and with other states for the interstate shipment of this class of cattle.

The general rules under consideration are:

(1) The breeder shall sign an agreement to submit every bovine animal over the age of six months to the Department inspector for a test as often as may be thought necessary by the Commissioner of Agriculture to maintain the herd free from tuberculosis.

(2) He will agree to dispose of all cattle in accordance with our present law relating to bovine tuberculosis.

(3) He will add no cattle to his herd that have not passed a tuberculin test administered by a veterinary inspector of the Department of Agriculture, and under orders of the Commissioner of this Department.

(4) He will agree to comply with all rules and regulations of the Department in the matter of sanitation.

(5) He will agree not to use skim milk, whey or other dairy products originating from a non-accredited farm for the purpose of stock feeding, unless the product has first been properly pasteurized at 145 degrees F. and held at that temperature for thirty minutes.

To put this plan in operation it is necessary that we receive the co-operation of the pure bred breeders of the state. Cattle of this state, and especially the pure bred herds, show a relatively small percentage of tuberculosis, and it is to be hoped that this proposed plan of inspection, testing, and control, provided for, and certified to, by the state will afford an opportunity to the breeder to add to the value of his herd. It will have the effect of driving fraudulent dealers from the competitive market by raising the standard of the legitimate healthy herd. It will compel carefulness on the part of the breeder when in the rôle of a buyer he finds he must introduce new blood into his herd. And, finally, it will promote confidence in the healthfulness of these cattle, and give the buyer a knowledge of true conditions.

FOOT-AND-MOUTH DISEASE.

An outbreak of foot-and-mouth disease during the fall of 1914 presented a serious menace to the livestock industry of the United States. First appearing in Michigan, the malady spread to twenty-two states and the District of Columbia. This disease is of such a highly contagious character and the infection so easily spread that its immediate control and eradication was of great economic significance.

There have been five outbreaks of this disease previous to the one in 1914. The first three occurred in 1870, 1880, and 1884, and were trifling when compared with those of 1902 and 1908.

In dealing with all these outbreaks a policy of quarantine and slaughter was adopted by the federal and state officials, which is the method now in common use in all countries which have so far coped with the disease. It appears better to concentrate the expense incident to the extermination of foot-and-mouth disease by purchasing and slaughtering all affected and exposed cattle after judicious appraisement, and experience in this country has demonstrated the advisability of this method.

Statement showing number of animals slaughtered and expense incurred by the federal government in connection with the destruction of animals and property, the burial of animals, disinfection of premises, etc., in the eradication of foot-and-mouth disease, October, 1914, to March, 1916:

States	*No. of Animals*	*Amts. Paid*
Connecticut	876	$27,886 89
Delaware	223	6,360 09
District of Columbia	53	3,769 96
Illinois	79.257	1,472,049 68
Indiana	6,890	91,404 74
Iowa	3,913	68,143 67
Kansas	1,530	42,576 67
Kentucky	4.086	74,934 16
Maryland	2,782	43,907 48
Massachusetts	7.912	115.789 14
Michigan	7,841	114,067 24
Minnesota	60	1,306 62
Montana	1.656	34,883 28
New Hampshire	104	3.006 13
New Jersey	2.146	67,157 00
New York	6.265	251,092 87
Ohio	12,150	193,293 41
Pennsylvania	27.430	566.717 00
Rhode Island	1,396	41,899 66
Virginia	848	14,246 42
Washington	102	2.025 00
West Virginia	496	8,392 38
Wisconsin	4.704	69,454 10
Totals	172,720	$3,314,363 59

The amounts paid by the several states were approximately the same as paid by the federal government. Salaries, travel, and miscellaneous expenses of bureau employees amounted to about $1,115,000 in addition to total of statement.

WASHINGTON OUTBREAK.

On November 10, 1914, the State Department of Agriculture received information that two cars of cattle en route from Wisconsin to Roy, Wash., had been unloaded and fed on November 5th in yards at the Minnesota transfer situated near St. Paul, Minn., and that these pens were occupied November 2d by cattle which were later found to be affected with foot-and-mouth disease on arrival in Montana. The advices indicated that this shipment would arrive over the Northern Pacific railway as it was presumed at that time to be in transit somewhere in Montana.

Dr. F. H. Mason, Spokane, Wash., and Dr. C. M. McFarland of the Bureau of Animal Industry were notified to be on the lookout for this shipment and upon its arrival inside the State of Washington to immediately quarantine all animals for subsequent developments. The cattle did not arrive at Spokane until November 13, 1914, when an examination was made in special corrals, constructed for these cattle by the transportation company. The first examination revealed a slight stomatitis, or inflammation of the mouth cavity, with no apparent lesions among any of the animals. Immediately upon receipt of this advice, the cars containing the shipment and the individuals caring for the animals, were placed in quarantine with the cattle.

LILY OF WILLOMOOR AND HER CALF.

World's record cow. Produced 84,891 pounds of milk and 3,362.05 pounds of butter fat in five years. Owned by J. W. Clise, Seattle Wash.

On the morning of November 16th, a positive diagnosis of foot-and-mouth disease was made by the state and federal inspectors. Approximately fifty per cent (50%), or fifty-one animals, displayed lesions of foot-and-mouth disease three days after their arrival. Immediate notice was given to Mr. H. S. Royce, the owner of these cattle, and on Wednesday, November 18, 1914, the shipment, consisting of thirty-two (32) pure bred Holsteins and seventy (70) grade Holsteins, were appraised. The pure bred animals were appraised at fifty dollars ($50.00) each and the grade animals at thirty-five dollars ($35.00) each, making a total of four thousand and fifty dollars ($4,050.00). The appraisal was made and estimated on the beef basis, Mr. David Munroe of Spokane representing the owner, Dr. C. M. McFarland representing the federal government, and Dr. H. T. Graves the state.

By Saturday, November 21, 1914, all the cattle had been killed and cremated, cars thoroughly disinfected and all pens, litter, etc., safely disposed of.

It has been the policy of all other states of the Union to compensate the owners of condemned cattle on a basis of one-half the appraisal value, the federal government paying one-half and the state where the outbreak occurred paying the balance. The foregoing statement indicates the amounts paid by the federal government and the various states.

In handling and disposing of this one outbreak we enjoyed the fullest co-operation by the owner of the cattle, Mr. H. S. Royce, Kapowsin, Wash. During the 1915 legislative session it was recommended that Mr. Royce be reimbursed, after the policy prevailing in other states, but unfortunately this was not done. I sincerely trust that the next legislature may see the justice of this recommendation and allow Mr. Royce $2,050.00, which is one-half the appraised value of the cattle destroyed in 1914. He has received this amount from the government. The actual value of the animals was many times that amount, as thirty-two of them were registered and of pure breeding. We were certainly fortunate in having the assistance of Mr. Royce, for if the infected animals had been held in quarantine on account of legal restrictions, it is likely that the situation would have been very serious in so far as the livestock industry of this state is concerned.

Subsequent to the Spokane outbreak the Department traced and examined every shipment of livestock that had entered the state since October 1, 1914, and supervised the disinfection of 2,000 livestock cars and every public stock yard in the state.

Quarantine restrictions against an importation of livestock from other states were enacted and every additional precaution taken against a recurrence of the trouble.

GLANDERS.

For many years the prevalence of glanders among the horses of the commonwealth has been widespread.

Years	*Animals Tested and Examined*	*Animals Reacting and Destroyed.*
1895-6	138	15
1896-8	34	20
1898-00	58	46
1900-2	156	41
1902-4	238	24
1904-6	967	107
1907-8	1,407	131
1909-10	1,698	255
1913-14	1,810	28

During the period of this report we have investigated 125 different reports of this disease. There have been 1,234 horses tested with Ophthalmic Mallein, or the blood complement-fixation test. One hundred and fourteen (114) horses reacted and have been destroyed.

The problems connected with the suppression of this disease are many and difficult of solution.

A very important factor in the success of our method of control has been the prompt killing of animals showing clinical symptoms. Exposed animals are tested with the Ophthalmic Mallein test and all positive cases are also destroyed. The premises, stables, troughs, etc., are all carefully disinfected under the supervision of the examining inspector.

We are usually able to complete the destruction of diseased animals without difficulty, but occasionally we find an owner who is inclined to hide the disease. These cases are troublesome and ordinarily involve court procedure. Destruction of diseased animals under these conditions is carried out on the principle of abating a public nuisance.

The disease has appeared in Adams, Columbia, Chelan, Douglas, Franklin, Ferry, Garfield, Grant, King, Lincoln, Okanogan, Spokane, Walla Walla, Whitman and Yakima counties.

The following rules and regulations relating to the control of glanders are now in force:

STATE OF WASHINGTON—DEPARTMENT OF AGRICULTURE

ORDER NO. 5.

Rules and Regulations Concerning Glanders or Farcy.

1. In all cases of suspected glanders or farcy, the owner or party in charge shall immediately isolate the suspected animals, then notify the commissioner of agriculture, describing symptoms exhibited by suspected animals, and advising of the present location of the isolated animals.

2. When the Commissioner of Agriculture or his regularly authorized agent determines by unmistakable examination that an animal is affected with a dangerous, communicable disease known as glanders or farcy, such animals shall be destroyed and the carcasses immediately disposed of by burning or burying not less than six (6) feet in the earth.

3. Immediately after slaughter the premises must be thoroughly disinfected as prescribed by the examining Veterinarian. All exposed or contact horses must be quarantined on the premises and tested with mallein or complement fixation test at the earliest possible moment, and all typical reactors destroyed. After the premises and all objects with which the diseased animals

have come in contact have been burned or thoroughly disinfected, all animals mallein tested that have failed to react may be released from quarantine.

Sec. 2, Chapter 100, Laws of 1915.

WILSON JOHNSTON,
ELMER E. HEG,
FREDERICK R. HEDGES,
MRS. MARION M. MCCREEDIE,
State Board of Health.

H. T. GRAVES,
Commissioner of Agriculture,
Olympia, Wash.

Effective June 11, 1915.

HOG CHOLERA.

Hog cholera continues to be a menace to the swine industry of the state, and although it has not reached the degree of prevalence as reported in our first biennial report it is still a factor to be considered by the hog raisers.

Walla Walla, Whitman, Okanogan, Klickitat, and Yakima counties have been most seriously affected, but by prompt quarantine and serum inoculation measures coupled with sanitary requirements and disinfection of the premises, I am pleased to state that the ravages of this disease are abating.

The outbreak in Walla Walla county reached such proportions in 1914 that the following quarantine was issued from this office December 11, 1914:

STATE OF WASHINGTON—DEPARTMENT OF AGRICULTURE.

OLYMPIA, WASH., Dec. 11, 1914.

"The fact has been determined and notice is hereby given that a contagious, communicable disease, known as Hog-Cholera exists in the swine of Walla Walla County.

Now, therefore, I, H. T. Graves, Acting Commissioner of Agriculture, under authority conferred by Section 2, Chapter 167, Laws of 1895, do hereby quarantine that portion of Walla Walla County, twelve (12) miles up Mill Creek, East from Walla Walla; thence, South four and a half (4½) miles to State Line; thence, West along the State Line to Twilight; thence, along the course of the State Macadamized Highway to Walla Walla, the place of beginning.

During the existence of this quarantine the movement, or trailing, or driving of swine, or the carcasses of swine, from the area hereinbefore quarantined, to any point outside the quarantined area, is prohibited, except said movement of swine be for immediate slaughter under U. S. Government meat inspection regulations, or after the carcasses of swine have been passed by State or Federal inspectors for food purposes.

(Signed) H. T. GRAVES,
Acting Commissioner of Agriculture."

These restrictions remained in force until the spring of 1915, when conditions warranted the revocation of the quarantine, and on order issued from this office March 6, 1915, again placed this district in the free area.

An attempt by members of a serum company of Oregon to secure immune hogs for an anti-hog-cholera serum plant located at North Portland, infected a number of hogs near Goldendale, Klickitat county, during the winter of 1916, in which approximately 200 animals were involved. This incident brings forcibly to mind the vigilance, care and technique required in handling hog cholera virus without danger to the health of the animals. Such a danger as this was foreseen when the following order was issued:

STATE OF WASHINGTON—DEPARTMENT OF AGRICULTURE.

ORDER NO. 4.

Regulations Governing the Sale, Distribution and Use of Anti-Hog-Cholera Serum, Also the Sale and Distribution and Use of Serum and Virus Within the State of Washington.

1. All anti-hog-cholera serum sold within the state or imported into the State of Washington for sale, distribution or use shall be produced under a license issued by the U. S. Bureau of Animal Industry, Department of Agriculture.

(a) The use of anti-hog-cholera serum is not restricted in any way.

2. The sale, distribution or use of virus shall be prohibited except under the following conditions, to-wit:

(a) All virus used for immunizing hogs against cholera shall be administered by an authorized veterinary inspector of the Department of Agriculture.

(b) No virus shall be shipped into the State of Washington or sold for distribution except to an authorized veterinary inspector of the Department of Agriculture.

(c) All hogs subjected to the simultaneous method of immunization, together with all yards, corrals, sheds or feeding lots to which said hogs have access (which corrals, yards, sheds, or feed lots must not be adjoining a public highway), must be quarantined for a period of not less than thirty days. Conspicuous notices of quarantine shall be posted upon said premises in the form of a placard furnished by the Department of Agriculture.

(d) All hogs subjected to the simultaneous method of immunization must be dipped in one of the standard recognized dips before being released from quarantine, and all yards, corrals, sheds or feed lots in which said hogs had access must be thoroughly cleaned and disinfected. Dipping of hogs, thorough cleaning and disinfecting of yards, corrals, sheds or feed lots must be done under the supervision of an inspector of the Department of Agriculture.

3. Veterinary inspectors administering virus shall immediately render full report to the Commissioner of Agriculture, giving names and addresses of owners and numbers of hogs treated.

4. The violations of any of the above rules and regulations will constitute a misdemeanor.

Sec. 2, Chapter 100, Laws of 1915.

Wilson Johnston,
Elmer E. Heg,
Frederick R. Hedges,
Mrs. Marion McCreedie,
State Board of Health.

H. T. Graves,
Commissioner of Agriculture.
Olympia, Wash.

Effective June 11, 1915.

Realizing the possible danger of introducing foot-and-mouth disease by the anti-hog-cholera serum secured from districts in which that disease existed, Department Order No. 1, under date of April 6, 1915, prohibited the importation of aforesaid serum from certain states where that disease had been prevalent or which had been exposed. This order remained in force until August 1, 1915, on which date it was repealed by Department Order No. 8.

Department Order No. 3, relating to the control of hog cholera and swine plague is appended and is self-explanatory. As the control of this disease depends upon the co-operation of the owner, it is to be hoped that cases of deaths of hogs in which symptoms of hog cholera are shown will be promptly reported to this Department.

STATE OF WASHINGTON—DEPARTMENT OF AGRICULTURE.

ORDER NO. 3.

Rules and Regulations Relating to Hog Cholera and Swine Plague.

Rule 1. When an outbreak of hog cholera or swine plague appears, the owner must immediately notify the Commissioner of Agriculture, or an authorized veterinary inspector of the Department of Agriculture.

The said officer shall quarantine all portions of the premises upon which hog cholera exists, and placard same with card furnished for this purpose.

Rule 2. All persons, except the owner, duly authorized assistants, medical advisor, are forbidden to enter an enclosure where diseased hogs are confined.

Rule 3. Hogs must not be moved from any quarantined premises except by permission of the Commissioner of Agriculture or his authorized agent.

Rule 4. It shall be the duty of the owner, or any other person having in charge any swine that have died of any disease, immediately upon the fact of such death coming to his knowledge to burn the same to ashes and clean and thoroughly disinfect his pens, yards, and swine houses.

Rule 5. No person shall feed any hotel, restaurant or eating house swills or refuse of packing house offal to swine unless the same has been thoroughly cooked and rendered free from the possibility of carrying hog cholera or other infection that might be transmitted through a cholera infected ham or bacon rind. All dogs in a district where hog cholera is known to exist must be restrained from running at large and must be confined to owner's premises.

Rule 6. All railroad cars, steamboats and other means of transporting hogs must be thoroughly cleaned and disinfected before hogs shall be allowed shipment if for purposes other than immediate slaughter.

Rule 7. All hogs allowed to come in contact with any public corral, yard, chute, or undisinfected railroad car shall be considered as exposed to hog cholera and shall not be sold for feeding or breeding purposes unless immunized with Anti-Hog-Cholera Serum.

The violation of these rules and regulations constitutes a misdemeanor.

Sec. 2, Chapter 100, Laws of 1915.

Wilson Johnston,
Elmer E. Heg.
Frederick R. Hedges,
Mrs. Marion M. McCreedie,
State Board of Health.

H. T. Graves,
Commissioner of Agriculture,
Olympia, Wash.

Effective June 11, 1915.

ANTHRAX.

Anthrax is primarily a disease of domestic animals and in some states is one of the great scourges of animal life. It is also a disease which is communicable to man, and during the past year several deaths in persons are recorded.

The disease is transmitted in a number of ways and assumes different forms, all of which are especially virulent.

During the period of this report we have investigated several reported cases of anthrax. Dr. G. A. Jones, Sedro Woolley, reported an outbreak of anthrax on the premises of H. L. Robertson, Van Horn, Wash., in February, 1915. Blood specimens were forwarded to the federal public health laboratory at Seattle and identified as probable anthrax, so as a precautionary measure all exposed animals, numbering one hundred and two (102) head, were given anthrax vaccine and the premises thoroughly disinfected. No further losses were reported.

Dr. J. H. Woodside, Redmond, Wash., reported an outbreak of anthrax on the premises of Frank Dupius, Issaquah, Wash., in March, 1915. Laboratory examination of blood and post-mortem appearances indicated anthrax. The exposed animals were vaccinated with no further losses.

WILLOMOOR ETTA, THIRD.

World's record two-year-old Ayrshire cow. Record 16.621 pounds of milk, 666.06 pounds of butter fat in one year. Owned by J. W. Clise, Seattle, Wash.

On October 7, 1914, in a shipment of several hundred head of sheep received at the packing establishment of Frye & Co., Seattle, from Leavenworth, Wash., there were a large number of dead animals and others sick. The post-mortem appearance of the animals indicated anthrax, and we were therefore advised accordingly by Dr. J. Madsen, inspector-in-charge at Seattle. Chelan and Okanogan counties were placed under temporary quarantine pending further investigation and the movement of sheep from these counties suspended. Several bands of sheep which had just moved overland from these counties were traced and examined by our inspectors with negative results.

The inspectors also traced and examined 3,500 sheep of the band from which the Seattle shipment was made. No evidences of disease could be found in this band. The following report indicates the completeness of this investigation:

NORTH YAKIMA, WASH., Oct. 16, 1914.

"*H. T. Graves, Olympia, Wash.*

DEAR SIR: My findings regarding the reported outbreak of anthrax were as follows: On October 1st the bands belonging to Forest Wenner of this city were corraled at a point approximately fifteen miles southwest of Pateros in (according to reports) good health, the lambs were separated from the ewes, the former were driven to the stock yards at Pateros, the latter in a southeasterly direction to the Columbia River Ferry at Entiat (the former place in Okanogan County, the latter in Chelan). On Monday morning the lambs were loaded aboard cars furnished by the Great Northern Railway and shipped to Frye & Co., at Seattle.

The ewes were crossed over the Columbia River at Entiat into Douglas County and driven in a southernly direction with White Bluffs as their objective point. The ewes were crossed on Tuesday and Wednesday, October 5th and 6th.

The first manifestation of disease or sickness appeared among the lambs about twenty-four hours after they were separated from their mothers, and on the trail to Pateros the herders thought little of it on account of them being subject to severe exposure in the nature of a heavy snow storm. The exact number that died before loading aboard cars I have been unable to ascertain, but do not think it exceeded twenty animals.

On their arrival in Seattle there were some forty or fifty dead lambs in the cars, death at this time was supposedly due to smothering or as the results of exposure before loading and during transit. However, following unloading the fatalities increased for two days then apparently diminished, but by this time a diagnosis of anthrax had been made by the Pacific Wasserman Laboratories of Seattle, Wash., and a diagnosis of probably anthrax by Dr. Lloyd of the Marine Hospital Service, and Dr. Simpson of the Seattle Health Department Laboratories on bacteriological examination of samples taken from dead animals, and Frye & Co. ordered all sick and exposed animals slaughtered and incinerated or tanked under sixty pounds pressure. Under the direction of Dr. Madsen of the U. S. B. A. I., all pens, sheds, cars and grounds were subjected to a thorough disinfection under the direction of Drs. Madsen and Harrington, the latter veterinarian representing Frye & Co. in the investigation.

On October 12th I recommended to your Secretary, Mr. Fuller, that in the light of developments and reports it would be well as a precautionary measure to quarantine both Chelan and Okanogan Counties, pending investigation.

After making a trip to the mentioned counties and interviewing stockmen, I found that the disease was apparently confined to the sheep of Mr. Wenner, also that his sheep were then in Douglas County at a point about twenty miles North of Ephrata. Dr. Baker, who was working with me in the matter, was asked to go and examine them and if findings justified to quarantine on the first range that they could reach that had food and water sufficient.

Before going to the above mentioned district I had examined the slides at the Seattle Health Office, also their cultures and reviewed their work in general coupled with the fact that I could not find a case of an adult sheep having succumbed to the disease, either from infection or inoculation. I have come to the conclusion that whatever the disease it positively is not anthrax. My conclusions are based on the following reasons:

1. The slides examined were not typical morphologically of Bacillus Anthracis. They contained end spores but did not show the chain formation.

2. The laboratories (Seattle City and Marine Hospital) were not able to grow any cultures under aerobic conditions.

3. It would be impossible to have a strain of anthrax of sufficient virulence to kill lambs as rapidly as these died and not kill adult sheep also.

4. There is history of lambs having died last summer when being driven into the mountains of the Okanogan reserve, one firm losing 200, and another going to the Colville Forest Reserve losing between 600 and 800, but no adult sheep of those lost in the early summer were supposed to die from Phyto toxis, but symptoms were very similar to these. These lambs began dying when they got low down on the cattle ranges, in fact where they were separated was within five miles of the ranches where cattle have been ranging for years, but sheep have not been going into this range before the summer of 1912. No deaths have been reported in cattle only from the common cause among the unvaccinated calves from "Black Leg," Dr. Baker having furnished through your office vaccine to the ranchers.

5. The lamb innoculated experimentally at Frye & Company's yards on autopsy at which I was present showed all the post mortem symptoms of "Symptomatic anthrax" and the organisms of typical rounded end club shaped end spore formation were recovered from the intermuscular spaces, the spleen was not enlarged, there was no Hematuria, the Hemolymph glands were of normal appearance. The only changes in the lungs or liver were the usual post mortem changes. There has been in all of the slides a small organism which was gram negative morphologically of the Pasteurella group and probably the bacillus ovisepticus. From all appearances in my opinion the cause of the fatalities is either symptomatic anthrax (Blackleg) or Hemorrhagic Septicemia, and I think the former.

With this evidence on hand I recommended to your Mr. Fuller on the 14th inst. that the quarantine of Okanogan and Chelan Counties be raised, but that as a precaution I respectfully advised that all cattle and sheep shipped on any road be subject to veterinary inspection until a positive diagnosis is made. There is no trace of any disease among sheep in Yakima or Benton Counties so far as I can learn.

Respectfully,
(Signed) Robert Prior,
Veterinary Inspector.

BLACKLEG OR SYMPTOMATIC ANTHRAX.

This disease affects young cattle between the ages of six and twenty-four months and occasions great losses unless the owner takes proper precautionary measures. The disease is easily recognized as its symptoms are very characteristic and is caused by the blackleg bacillus which gains entrance into the body through abrasions of the skin. It is therefore considered a wound infection disease, and occurs with more or less regularity in certain pastures, feed lots or stables.

Prevention consists of proper hygienic and prophylactic measures. It has been found that preventive vaccination is successful and during the period the division has distributed several thousand doses of vaccine to the farmers of the state which was furnished by the United States Bureau of Animal Industry.

In addition to the distribution of this vaccine we have personally investigated and diagnosed a large number of outbreaks in those sections of the state where the disease appeared to be unknown.

RABIES.

This disease has been prevalent throughout this state during the past year but in far less degree than during the period covered by the previous report.

Practically all warm-blooded animals are susceptible to the infection of rabies, the disease being the most common, however, in the dog. We have investigated a number of outbreaks in dairy herds where the animals involved have been of valuable breeding stock and the losses severe. In two dairies in particular, one in Spokane county, the other in King county, there were a large number of high-priced cattle lost through the bite of rabid dogs.

The Department has taken active measures in the suppression of these outbreaks, and while the disease is still reported from time to time we do not feel it practical to promulgate a state-wide dog-muzzling regulation at this time.

The diagnosis of this disease involves the laboratory examination of the brain of the suspected animal, and we are greatly appreciative of the co-operation of the state board of health and the city of Seattle for the many laboratory courtesies extended.

ACTINOMYCOSIS (LUMPY JAW).

A large number of cases of this disease have been investigated. Affected animals are either destroyed or quarantined for treatment, depending on local conditions and the extent of the infection.

CONTAGIOUS KERATITIS.

An infectious disease involving the eyes of cattle. We have investigated several outbreaks of this trouble in Western Washington, which have been effectively controlled through proper treatment. No animals suffering from this trouble have been slaughtered during the past period.

SHEEP SCABIES.

In April, 1915, Dr. C. M. McFarland, inspector-in-charge, United States Bureau of Animal Industry, Spokane, Wash., advised us that sheep scab had been reported in sheep and goats near Hartline. An investigation confirmed this report, except that only goats and no sheep were involved. All affected and exposed animals were immediately quarantined and ordered dipped, under our supervision, with no further spread of the infection.

VERMINOUS BRONCHITIS.

This trouble is due to a parasitic invasion of the respiratory apparatus. It is commonly called "lung worm disease." Wet seasons favor the development of the disease, as moisture insures the life of the embryo outside of the animal body; therefore the complaints and requests for investigation have been extraordinary during the past season.

The proper control measures have been recommended in all cases.

CEREBROSPINAL MENINGITIS (FORAGE POISONING).

During the past two years we have investigated a number of outbreaks of this disease, which have been both sporadic as well as epizootic in form.

PETER PAN.

Most noted Ayrshire sire. Owned by J. W. Clise, Seattle, Wash.

The disease is not transmitted from animal to animal and is presumed to be due to the effect of toxins or poisonous products eliminated by fungi or mould on feed.

The disease occurred in Adams, Columbia, Grant, Spokane, and Kittitas counties.

In November, 1915, state aid was solicited by Mills & Sons, Ritzville, Wash., in connection with unusual losses among cattle. Three field veterinarians were at once detailed to investigate and found that approximately forty out of eighty head of cattle had died on one farm, and approximately the same number on an adjoining ranch, with other losses in the district.

The trouble was disagnosed as forage poisoning and a complete change in feed steadily eliminated further trouble.

MISCELLANEOUS INVESTIGATIONS.

Sickness and death among domestic animals from other diseases not classified herein are more or less constantly occurring in the different localities of this state. Often these losses are reported as being due to a contagium and an investigation is necessary in order to determine the causative factors. Improper care and feeding of animals was, in many cases, the cause of such sickness, and when the advice and instructions of the inspectors were followed, the trouble ceased.

In the spring of 1915 we were hastily notified of an outbreak of disease among sheep at Boyds, in Ferry county. Investigation revealed that these losses, which totaled over 1,500 in one band of about 2,000 sheep, were due to acute poisoning by Zygadenus or death camas. It was necessary for the division to supervise the disposal of the dead animals and issue the customary warning to other bands.

We have also been called out on innumerable occasions to investigate similar losses due to other poisonous plants. The division has also investigated and eradicated several outbreaks of lip-and-leg ulceration in sheep and hogs caused by bacillus necrophorous. One band of sheep was severely affected with the venereal form of necrobacillosis.

The prompt action of numbers of the veterinary profession of the state in reporting cases of infectious diseases coming under their observation has resulted in conserving the animal health, which, in other words, is the animal wealth of the state. The Department, and the state at large, is indebted to these men for the support and assistance they have rendered.

STALLION REGISTRATION.

The stallion and jack registration law is of prime importance to the livestock industry in that it protects the public from dishonest stallion owners. All information concerning stallions or jacks can be obtained from the Department of Agriculture, where the license certificate shows a complete record of all animals.

The provisions of the statute make possible the tabulation of the exact number of pure bred stallions in the state and the removal of unsound draft stallions from public service. The law has apparently one weak feature—that of only one examination for soundness for the entire life period of the animal. As physical faults do not always develop during the first years of an animal's life, an examination and affidavit of soundness should be submitted every second year for renewal of license, in order to insure the utmost protection to the public.

This Department should exercise control over the veterinarians examining such animals for soundness, as there are many unscrupulous veterinarians in the state, who in many ways abuse the responsibility placed upon them under the present law.

It is urgently recommended that the legislature amend the law making the expiration of all licenses for jacks and stallions take place at a certain time, preferably the first of January every second year. This recommendation is based on two reasons: First, the cost of handling the same from the Department headquarters will be cut nearly in half because of a considerable saving in postage, stationery and clerk hire. This date will be fixed in the minds of all owners of animals, and delinquency notifications will become less and less necessary. Second, the breeding season opens in March and registrations made for the year, being accompanied with the affidavit, give better measure of protection. Renewal could be compelled by statute not later than April 1st, thus giving ample time for both public and the Department.

The present law requires this Department to recognize all associations recognized by the United States Department of Agriculture. Since the passage of the act the federal department has withdrawn recognition of all societies. This brings about a peculiar condition over which the Department has no control, and recommendation is made that the present law be amended so that recognition can be granted to all associations endorsed by the National Association of Registration Boards or the National Society of Record Associations or both, as the commissioner of agriculture shall determine.

STALLIONS AND JACKS—CLASSIFICATION BY COUNTIES.

COUNTY	STALLIONS								JACKS*		TOTALS			
	Percheron	Belgian	Shire	Clydesdale	French Draft	French Coach	German Coach	Grade Stallions	Pure Bred Jacks	Grade Jacks	Total Pure Bred	Total Grade	Grand Total	Number Delinquent
Adams	19	3	2	....	2	....	1	14	....	5	27	19	46	2
Asotin	4	1	3	1	....	....	1	6	....	2	10	8	18	3
Benton	7	1	....	....	....	....	....	10	1	3	9	13	22	2
Chelan	2	1	....	....	....	....	....	10	1	....	4	10	14	1
Clallam	2	....	....	1	1	....	....	1	....	....	4	1	5	....
Clarke	5	1	....	....	....	1	2	13	1	1	10	14	24	1
Columbia	7	4	....	....	....	....	....	7	1	5	12	12	24	2
Cowlitz	2	1	....	....	....	....	....	1	....	....	3	1	4	....
Douglas	12	4	9	2	1	1	1	41	1	8	31	49	80	9
Ferry	2	1	....	....	2	....	....	8	....	1	5	9	14	....
Franklin	7	1	2	....	....	....	....	3	1	3	11	6	17	....
Garfield	4	2	1	....	....	....	....	5	1	1	8	6	14	2
Grant	30	2	4	1	....	....	....	25	1	4	38	29	67	4
Grays Harbor	2	1	....	....	....	....	....	2	....	1	3	3	6	....
Island	1	1	....	....	....	....	....	2	....	....	2	2	4	....
Jefferson	....	....	....	....	....	....	....	1	....	....	....	1	1	....
King	2	....	....	....	....	....	....	5	....	....	2	5	7	....
Kitsap	1	....	....	....	....	....	....	....	....	....	1	....	1	....
Kittitas	12	....	1	2	2	....	....	11	1	....	18	11	29	....
Klickitat	6	2	3	2	2	....	....	8	....	....	15	8	23	3
Lewis	5	6	1	....	....	....	1	3	3	....	16	3	19	3
Lincoln	25	11	9	....	3	....	....	43	3	12	50	55	105	8
Okanogan	13	1	5	4	....	....	....	51	....	6	23	57	80	9
Pacific	....	2	....	....	....	....	....	3	....	....	2	3	5	2
Pend Oreille	....	1	....	....	....	....	....	1	....	....	1	1	2	....
Pierce	1	1	....	....	....	....	....	2	....	....	2	2	4	....
San Juan	....	1	....	....	1	....	....	3	....	....	2	3	5	1
Skagit	2	1	....	....	1	....	1	4	....	....	5	4	9	....
Snohomish	2	....	....	1	....	....	....	7	....	....	3	7	10	....
Spokane	11	5	11	....	3	....	....	17	1	1	31	18	49	3
Stevens	7	....	....	....	....	....	3	29	1	....	11	29	40	....
Thurston	4	....	1	....	1	1	2	7	....	....	9	7	16	....
Walla Walla	8	2	3	....	1	....	1	11	1	....	16	11	27	1
Whatcom	4	4	1	....	....	....	....	2	....	....	9	2	11	2
Whitman	39	12	33	4	2	....	1	43	2	10	93	53	146	6
Yakima	21	....	3	3	....	....	1	16	....	6	28	22	50	....
Other states	5	2	3	....	1	....	....	8	1	2	12	10	22	1
Total	274	75	95	21	23	3	15	423	20	71	526	494	1,020	65

* Pure bred, 51.56%; grade, 48.44%.

THE HORTICULTURAL DIVISION

The 1915 session of the state legislature enacted into law our present horticultural code, and in it are specified certain duties to be performed by the Horticultural Division. As members of this division we have interpreted these duties in the way that to us seems most practical and of greatest service to the fruit growing interests of the state.

The work of the Horticultural Division is now being conducted along the following lines:

1. Orchard work.
    - (a) Educational.
        - The holding of field demonstrations.
        - The holding of local meetings.
        - Field surveys for horticultural data.
        - Crop estimates for the benefit of the fruit shippers.
        - Advisory work in insect, fungus and bacterial control.
    - (b) Police work.
        - The disinfection and cleaning up of neglected orchards.
2. Nursery inspection.
    - Licensing of nurseries.
    - Inspection of nurseries.
    - The inspection of nursery stock shipped.
    - The inspection of nursery stock imported from foreign countries. (In cooperation with Federal Horticultural Board.)
3. The enforcement of the State Insecticide and Fungicide law.
4. The adoption of standard grade and pack rules for apples.
   Inspection of fruits for grade and pack.
5. Fruit and vegetable inspection.
   Inspection of imports and exports.
   Pests and diseases intercepted.
6. Potato inspection.
    - (a) Educational.
        - The studying of pests and diseases with potato growers.
        - Experimental certification of seed potatoes in one field.
    - (b) Police work.
        - The inspection of potatoes shipped into the State for food or seed purposes.
7. Law of commission merchants. (Recently declared null and void by the Supreme Court.)

THE ORCHARD WORK.

This is the happiest part of our duties. Were it not for this phase of our work the police duties which are sometimes necessarily destructive in principle would grow tiresome. In this work it has been and is our aim to show the farmer how to avoid dangerous mistakes in growing, irrigating, cultivating, spraying, thinning, pruning, picking, packing, etc., that go to make a crop of higher quality.

In this work we seldom are considered as intruders. On the other hand, in the fruit districts of the state we are constantly in demand from growers who call for advice and assistance. Even many of the men we have been compelled to prosecute for negligence have called for our advice, thus indicating that their respect for our work is at least equal to the ill feeling caused by the prosecution. I have insisted that all our field men keep themselves informed as to the latest information issued by the Washington Experiment Station, and other experiment stations as well. Our men should, I believe, be able to carry much of this information to the growers in a practical way while the field visits are being made.

The principal part of the orchard work is educational, and the few cases of arrests and prosecutions that find their way into the newspapers are a very small part of the work. Trained men are necessary to make this branch of the work efficient, and although all our men are not college men, we have a very good hard working set of men in the Horticultural Division.

During the past three or four seasons there has been a general increase of enthusiasm for fruit growing; however, the duties placed upon this division have been greatly increased. The duties that fall to all the members of this division require a great amount of diplomacy to get results, and as the scope of the work is now broader than has ever been attempted before in this state, it has necessarily meant greater activity on the part of our inspectors.

Pear Blight. The dreaded pear blight disease has been raging in certain districts of the state since 1910, and the excitement and realization of its seriousness probably reached its zenith during the growing season of 1914. The feeling among the mass of growers will naturally decline now, but the disease is the same serious malady, and our efforts will have to be expended vigorously to encourage uniform methods throughout the orchard districts. The enforcement of the inspectors' notices will do much to push this along, but educational work in the way of orchard demonstrations is more important and effective.

In handling blight the inspectors are instructed to get the owner of the orchard to go over the work already done and explain any mistakes that are being made. Then to demonstrate the proper methods of cutting and disinfecting the tree and to explain other details incidental to the work, such as bridge grafting methods for saving girdled trees, etc. After five years of pear blight work I am confident that the control of this disease is practical but that the complete eradication is hardly possible. Farmers may read and be told much of the necessary details of this work, but some of them, failing to realize the real value of sterilization and other necessary points, often drift back into careless ways only to find within a year or two that their carelessness has been an expensive schooling.

To explain further our viewpoint in going about the orchard work will say in a way we liken ourselves to the salesman who attains success in selling goods. The salesman cannot force a man to buy of him. But if he is handling a thoroughly reliable and valuable article, and if the salesman has unbounded confidence in it the man is influenced to believe he needs the article and is thankful to the salesman for selling him the article that has proved profitable to him. In other words the economics of orcharding are staring the fruit grower in the face, and we are always trying to convince the newcomer or the negligent owner or superintendent, as the case may be, that certain details are an improvement over his present methods, and that he really needs to adopt that particular practice to get better results. The details of the pear blight work are many, and owing to the character of the work cannot be reported in figures as to amount done or results accomplished. The results obtained to date plainly show that the educational work has accomplished more and better results than has the exercise of police power. There are cases, however, where prosecution is the only way to get the work done, and in such cases the arrests have been made or the work has been done at the owner's expense.

Apple Mildew. Previous to the season 1914 powdery mildew had not been regarded seriously in either the Wenatchee, Yakima or Walla Walla valleys, where the results of this injury have since become more apparent. Last year this disease was found on the trees early in the spring. It was found on the twigs and in abundance on the new growth of foliage. The effect of the mildew on the fruit itself shows as the apple reaches maturity in the shape of irregular network or scratches, sometimes covering quite a large area on the surface of the apple, thus injuring the appearance of the fruit and lowering its market grade.

The Jonathan has been the most seriously affected of the commercial varieties. In some orchards these were so badly marked that the growers have found that this disease has been the cause of many apples being excluded from the extra fancy grade. Many of the varieties have been affected by the disease but to a much less extent. It seems, however, that the greatest damage done as a result of powdery mildew infection is that the vitality of the tree is weakened and sets fewer fruit buds. It has been observed that during a period of three years' infestation by powdery mildew in some orchards that the crop has been reduced to practically nothing as a result of fruit bud injury. With this thing in view the inspector at Prosser carried on during the 1915 season a very interesting orchard demonstration for the control of apple mildew. A particular orchard, of which he had a record of former crops and handling methods, was sprayed according to a schedule worked out by W. S. Ballard of the U. S. Department of Agriculture. The materials used were iron sulphide, atomic sulphur and milled sulphur. In this particular orchard the trees had been gradually weakened by this fungus until there had practically been no crop during the past two seasons.

The sprays applied practically controlled the disease and an examination of the trees for fruit buds during September showed a marked contrast to that of the previous year. Orchard demonstrations were carried on in the Walla Walla district for mildew sprayings beginning as late as the 11th of May in a number of orchards along the state line, and in the Touchet valley of Columbia county. Observations made July 8 and September 18 show that even with applications applied at those late dates the results were surprisingly effective. In the Wenatchee valley spraying for mildew has been carried on quite generally, but has been done principally with iron sulphide. There has been a considerable amount of scorching reported to have been caused by this material, which has not been the case where atomic sulphur and milled sulphur were used, and it seems quite likely that the two last named materials will be used another season in its stead.

Grape Mildew. In 1914, as well as in the season of 1915, mildew was the cause of a great deal of damage to the vineyards about Kennewick. The owner of a vineyard near Kennewick stated that mildew in his grapes had so discouraged him that he had almost made up his mind to pull up the vineyard. In the spring of 1915 the inspector arranged with this man for a co-operative spraying demonstration for mildew control. The results have been very good indeed and the owner is greatly pleased.

In this demonstration four materials were used on four separate blocks of the vineyard. Dry sulphur, sulphide of iron, milled sulphur, and atomic sulphur were the materials used, and are materials quite generally recommended by experiment station bulletins for the control of mildew. Dry surphur gave poorest results. Sulphide of iron, atomic and milled sulphur gave almost perfect results, and the owner was able to market several hundred baskets where he marketed little or none the year before. The demonstration has had the attention of a number of grape growers in that vicinity and they are greatly encouraged and pleased with the results.

In the White Salmon and Goldendale districts an unprecedented amount of mildew developed in grapes the season of 1915. The grape growers there maintain that it is the first season they have been troubled with grape mildew, and injury amounting to half of the crop in some vineyards has greatly discouraged those growers. Our inspectors have urged the adoption of mildew control sprays by these people and have given them the benefits of the demonstrations carried on at Kennewick.

Aphis Sprays. A year ago in the vicinity of Wenatchee, the inspector carried on a series of orchard sprayings to determine a spray material for aphis that was both effective and cheap. After trying out a number of materials he decided that tobacco sprays were most effective, but used alone were expensive. He used a number of materials in combination with Black Leaf 40, and found that weak solutions of Black Leaf 40 were greatly increased in effectiveness by the addition of lime. Black Leaf 40 in combination with lime has been used by a number of growers in Wenatchee, Grandview and Walla Walla districts with very satisfactory results.

It has been noticed for some time that aphis and ants were largely responsible for the dissemination of a large proportion of the summer spread of blight. This cheaper spray material, which is very effective for aphis, will be of much assistance in blight control work, if conscientiously used to control the insects largely responsible for the dissemination of this disease.

In the work with summer sprays the object was to obtain combination of efficiency and cheapness. Although in the test the following dilutions gave results, they are of much greater dilutions than generally used:

Formulae for 200 Gallon Tank.

	Cost
Black Leaf 40, 1 Pt. (1-1600), liquid whale oil soap, 6 qts.	$1 95
Black Leaf 40, 4-5 Pt. (1-2000), liquid whale oil soap, 6 qts.	1 68
Black Leaf 40, 1½ Pt. (1-1200) arsenate of lead, 6 lbs.	2 30
Black Leaf 40, 1 Pt. (1-1600), arsenate of lead, 6 lbs.	1 86
Black Leaf 40, 4-5 Pt. (1-2000), arsenate of lead, 6 lbs.	1 59
Black Leaf 40, 1 Pt. (1-1600), lime, 4 lbs.	1 43
Black Leaf 40, 1½ Pt. (1-1200), lime, 4 lbs.	1 88
Black Leaf 40, 4-5 Pt. (1-2000), lime, 4 lbs.	1 16
Black Leaf 40, 3-5 Pt. (1-1000), miscible oil No. 1, 4 gals.	3 16

In applying these sprays a pressure of 200 pounds and greater was maintained throughout and the work done as thoroughly as possible. Quassia chips and whale oil soap, the old and recognized aphis spray, gave the least satisfactory results. Quassia chips and whale oil soap:

Twenty pounds chips	$1 70	
Ten pounds soap	85	$2 55

Temporary results were obtained from Black Leaf 40 in all the accompanying combinations, but only the stronger solutions are being recommended. The materials in combination were first tried out in a commercial scale by our Wenatchee inspector, but have since been used in various proportions experimentally and commercially by our inspectors at Walla Walla, Prosser and North Yakima.

Blister Mite. Blister Mite caused considerable injury to fruit, particularly in the Zillah district during the seasons 1913 and 1914, and was serious in unsprayed orchards during the season of 1915.

The local inspector checked a number of orchards in that locality for the effectiveness of blister mite sprays. After a thorough canvass of a number of orchards sprayed with different materials, it was found that lime sulphur applied just before the buds burst to be very effective for this pest. Trees sprayed after the buds had burst showed no less mite injury than unsprayed trees. The Colonel Walker place near Zillah is one of the orchards which is practically free from blister mite, and the results were brought about by one good spraying of lime-sulphur just before the buds burst. In 1914 this orchard had extensive blister mite injury.

Codling Moth Survey. On September 20, 1915, a codling moth survey of the districts of Wenatchee, Yakima, Kennewick, Walla Walla, Kettle Falls, Spokane, Clarkston and White Salmon was begun, to get in writing as near as possible the detailed operations of a large number of farmers as to their methods of codling moth control. It took a great deal of work and diplomacy on the part of the field inspectors to get these records, and a good many days and evenings too were spent in the office in Olympia studying and compiling this information.

The season of 1915 was an unprecedented one for codling moth injury. A great many farmers insist that the poor results in their arsenate spraying were due to inferior lead arsenates. Some growers have backed up this contention by arguing that before the present European war the source of the arsenic supply was in Germany, and that during the past year and a half manufacturers have had to use a less reliable grade of arsenic. Whether or not there is any foundation in this contention I am unable to say. After talking the situation over with Dr. Cardiff, as members of the Insecticide and Fungicide Board, we authorized Mr. Clawson of Wenatchee and Mr. De Sellem of North Yakima to purchase samples of twelve of the commonly used brands, buying them in the original sealed package, and send them to the chemist for analysis. Personally I am of the opinion that the methods of application and the time of doing it have been more important factors than the chance of poor leads, as chemical analysis did not disclose that any particular lead was responsible for the poor results.

In making these summaries figures have been taken from surveys from all parts of the districts and it seems should represent fair averages. Not all of the orchards surveyed have been used in the general compilation, some being discarded on account of their location being between uncared for orchards, or in isolated districts where infestation is not bad when no sprays are applied, or the orchard was young. The object was to get a fair summary which would show the average conditions where codling moth exists. The compilation of these surveys has been made usually by localities as the blanks were received, and in the case of the Yakima valley three summaries have been made, one for the valley in general, one for the lower valley, and one for the upper valley.

In most localities our inspectors placed codling moth breeding cages in order to observe the condition of the moths and determine spray dates. In this survey these spray rates are accepted as correct.

Fourteen orchards in the Grandview and Zillah districts having 455 acres of apples in bearing were tabulated. Of this number eleven sprayed before the calyx closed with power outfits and pressure ranging from one hundred and eighty pounds to two hundred and fifty pounds. Three were late in applying the calyx spray. Thirteen used the Bordeaux type of nozzle for the calyx spray. One used the vermorel throughout the season.

That the calyx spray was quite effective is shown by the calyx infestation at picking time, which averaged less than 1.34 per cent. There were but three growers who repeated the calyx spray within ten days.

In spraying for the first brood of worms seven were late in making the application, four were right, one early and two did not spray. For the second brood, eight were wrong, four were right and two did not spray. Three sprayed in August. The amount of lead averaged about two pounds per fifty gallons of water, and ranged from one pound to three pounds. At picking time the average per cent for these fourteen orchards was 1.34 per cent calyx wormy, and 27.6 per cent side worms. Of these fourteen orchards five were clean cultivated, nine had cover crops of either alfalfa or clover. In eight of these orchards the spray for the first brood of worms was delayed until the crop of alfalfa could be cut and taken out of the way. One of the nine farmers did not allow the cover crop to delay spraying for the first brood. This average per cent of infestation of side worms is 16.8 per cent, and the average for the eight who delayed this spray is 31.1 per cent. The number of moth sprays during the season averaged 3.5 applications. Six and seven-tenths (6.7) gallons per tree was the average for the fourteen orchards at each application.

At Wenatchee the inspector made a survey of thirty-three orchards with an acreage of 437½ acres. Of this number thirty sprayed before the calyx closed, using power outfits with pressure ranging from 175 to 150 pounds. There were three growers who repeated the calyx spray in ten days. For the thirty-three orchards the percentage of calyx worms at harvesting time was 2.2 per cent. Three of these growers did not spray for the first brood of worms, twenty were right and ten wrong in the date of application.

For the second brood ten did not spray, seventeen were right and six wrong in the date of application. Seven sprayed during the first half of August. Mildew sprays were quite generally used during the season in combination with lead arsenate. Two farmers used atomic sulphur, one used Black Leaf 40, seventeen used iron sulphide, and nine used no materials in combination with lead.

Of these orchards twenty-nine were sprayed throughout the season with Bordeaux nozzles, eight were calyx sprayed with Bordeaux nozzles, and cone nozzles were used in later sprays. Four used vermorel nozzles for all sprays. Six brands of lead were used at the average strength of 2.1 pounds per fifty gallons of water.

At picking time the average percentage for these thirty-three orchards was calyx wormy 2.2 per cent, and 22.8 per cent side worms. Of these orchards seventeen were clean cultivated, and sixteen had cover crops. In seven of these orchards the spraying for first brood of worms was delayed until the crop of alfalfa could be cut and taken out of the way. Nine of these farmers did not allow the cover crop to interfere with the time of spraying for first brood of worms. The number of moth sprays during the season averaged 2.9 applications per orchard. Five and four-tenths (5.4) gallons per tree per application was the average for the thirty-three orchards.

In making the following summaries, figures were taken from seventy-nine orchards in all parts of Yakima county, from the Selah and Naches to Grandview. Some orchards on which records had been taken were not used in the summaries for obvious reasons. One or two were discarded because, on account of their location, surrounded as they were by uncared for orchards, they could with the utmost difficulty be kept clean, even with the most efficient sprayings. Some of the orchards in the upper Selah valley and on Tieton ridge were discarded because they were young orchards surrounded either by other young orchards or isolated so that even with no spraying they could not be as bad as some other orchards in less favorable locations would be with several sprays. The object was to get a fair summary which would show the average conditions where codling moth exists. From my own observations as well as from the figures obtained, I am positive that the chief reason for the unsuccessful work of the growers of the Yakima valley is, first, lack of thoroughness in spraying, and, second, failure to spray at the right time.

Calyx Spray.

Used at the right time	75
Used too late	2

Later Sprays.

Used at the right time	30
Used at the wrong time	48

Per cent of Calyx worms where calyx spray was used at right time, 6-10 of 1 per cent.

Per cent of Calyx worms where calyx spray was not used at right time, 3 per cent.

Per cent of worms where later sprays were used at right time, 5.1 per cent.

Per cent of worms where later sprays were used at wrong time, 20.3 per cent.

Per cent of Calyx worms where pressure was up to standard in calyx spray, .7 per cent.

Per cent of Calyx worms where pressure was too low in calyx spray, 1.4 per cent.

In these records the percentage of calyx worms is very low, but doubtless would have been considerably larger if there had been any way of computing the number of calyx worms in the apples which dropped and those that were taken off in the course of thinning.

Inspectors' Weekly Reports. This office has kept in touch with the work of the inspectors in the field, and the weekly reports which show the work done each day of the week have made it comparatively easy. When the face of the report sheet is insufficient the inspectors have been instructed to use the back of the sheet freely for reporting details and making explanations. These reports are contained in drawer file marked "Weekly Reports" and are available for the inspection of the Advisory Board at any time.

INSPECTION OF FRUITS AND VEGETABLES.

The inspection of fruits and vegetables is regular routine work of the inspectors, particularly those covering distributing points, and the work has been carefully done. Our inspectors at ports of entry where fruits from other states and foreign countries are received, are particularly active and careful in their inspections of all imported fruits to intercept and guard our industry against the importation of pests and diseases.

A great many shipments of Washington grown fruits have been repacked under our supervision, and a number of lots condemned and destroyed for infection. These figures can be compiled from our report files, but are not included here on account of limited amount of space allotted this division.

INSPECTION AT THE PORT OF SEATTLE.

The quarantine work of the Horticultural Inspector stationed at Seattle is becoming the most important part of his duties, and new rules and regulations are being issued by the Federal Horticultural Board almost weekly covering the inspection of imported agricultural and horticultural plants and products.

A special individual permit must be secured from Washington, D. C., before one can import from any country outside the United States, nursery stock, cotton or potatoes, and then upon arrival at port of entry, Seattle, shipments must be inspected and results given in writing submitting copies to the Customs Department at Seattle, Department of Agriculture at Olympia and the Federal Horticultural Board, Washington, D. C.

Foreign quarantines now existing prohibit from certain countries the importation of Indian corn or maize, pine trees, currant and gooseberry plants, all citrus nursery stock, cotton, cotton seed and hulls, potatoes, oranges, limes, grape-fruit, mangoes, peaches, avocadoes, plums, sugar cane, etc.

These quarantines were established to prevent the introduction into this country of the Downy Mildews and Physoderma diseases of Indian corn, white pine blister rust and European Pine Shoot Moth in the case of pine trees; white pine blister rust on currant and gooseberry plants; citrus canker, etc., on citrus nursery stock; pink boll-worm, etc., in cotton, cotton seed and hulls; potato wart, powdery scab, etc., on potatoes; avocado weevil in avocadoes; Mediterranean and Mexican fruit flies in deciduous and citrus fruits and some vegetables.

The following pests were intercepted at Seattle the past year:

From Japan—Parlatoria Pergandei (chaff scale) on maples;

Aulacaspis Pentagona (West Indan peach scale) on cherries;

Eighty boxes Japanese pears found to very badly infested with an unknown larva. Mr. E. R. Sasscer of Washington, D. C., states this larva, as yet unknown and not the Codling Moth, but very destructive;

Wistarias infected with a scale insect which California authorities were unable to identify, but said it was the largest scale ever seen.

Three or four large shipments of Manchurian corn or maize have come to Seattle the past year and were found to be badly infested with the Rice Weevil (Calandria Oryzae.) Now that the corn or maize is prohibited entry we do not expect to see any more of it.

We have also received several shipments of cotton, cotton waste and cotton thread from China. In the case of raw or unmanufactured cotton entering this port the same must be sent to Oakland, California, for fumigation, where the only cotton fumigation plant on the Pacific Coast exists. Certain grades of cotton waste and cotton thread are allowed entry here free from fumigation. These measures are for the purpose of preventing the introduction of the Pink Bollworm and other injurious insects.

From California we condemned five cars potatoes, eighty sacks and twenty seven boxes on account of potato tuber moth infection; also Cotoneaster and unknown plants which were infected with Aspidiotus Camellia (Greedy Scale) and Sassetia Olea (Black Scale.)

At two Seattle nurseries the inspector found potted lemon plants infected with Parlatoria Pergandei (Chaff Scale), and Junipers with Juniper Scale (Diaspia Caruelli.)

Early in January, 1916, the Federal Horticultural Board revised its ruling on potatoes from Canada where up to that time a quarantine on account of Powdery Scab had prevented the importation of potatoes except that during 1915, sixty-two cars were imported by special permit. From January 1st to June 30th, 1916, permits were issued by the Federal Horticultural Board to cover the importation of 576 cars of Canadian potatoes. Of this number however, only eleven cars were actually shipped into the state from Canada, but we now have on hand permits for two thousand tons to be brought here from Canada after September 1st. During May, June and July, of season 1916, there were 260 cars potatoes shipped to Seattle from California by rail and boat.

THE INSPECTION OF IMPORTED POTATOES.

During April, May, June and July of the season 1916, the Seattle market received 343 cars of potatoes from outside the state as follows: 196 cars from California, 62 cars from British Columbia, 45 from Minnesota, 11 from Montana, 11 from North Dakota, 6 from Idaho, 5 from Michigan, 4 from Wisconsin, 2 from Illinois, and one from Florida.

The fear that the potato tuber moth might be introduced into the potato fields of the state has been our reason for careful inspection of all potatoes from California. The strict inspection of these shipments has naturally meant quite a little inconvenience and expense to the shippers at both ends of the line, and occasionally has meant that a few cars rejected by the inspector here had to be returned to California in which case the round trip haul practically consumed the value of the car. It was for this reason that during May, 1916, the Seattle commission men and potato brokers took up a collection among themselves of $200.00 to pay the expense of inspector F. N. Rhodes to Los Angeles and Stockton in order that the potato shipments for this state might be inspected at shipping point rather than at destination. Mr. Rhodes went first to Los Angeles where the first shipments come from and later went to Stockton from where the largest amount of California potatoes are shipped to Washington points.

The method of procedure in inspecting these shipments was thorough, and where the inspector was unable to find one infected potato in the car he would then issue a certificate giving the car number, origin, number of sacks, consignee and destination, and stating "Apparently free from tuber moth." One copy of this certificate was given the shipper, one was sent to the Chief of the Horticultural Division, Olympia, Wash., and one to the inspector into whose district the shipment was made. All the shippers wanted the inspection and certificate, and in no case did they ship any of the rejected cars into Washington.

Mr. Rhodes passed 131 car loads which were shipped to Washington points as follows: 111 to Seattle, 14 to Tacoma, 4 to Spokane, 1 to Aberdeen and 1 to Everett. He rejected fifteen cars at the shipping point. The local inspector at Seattle on duty during Mr. Rhodes absence condemned five cars which however were not inspected in California. On account of the arrival of home grown early potatoes on the market in quantity around August first, this date approximately marks the close of the shipping season for this product from California points.

THE COLORADO POTATO BEETLE.

Early in the month of July, 1916, Mr. W. S. McClain, of Sunnyside, Washington, discovered the presence of a few specimens of the old fashioned Colorado Potato Beetle, and notified Mr. F. E. DeSellem, inspector-at-large for that district, of this discovery. Immediately a survey was begun to determine the extent and distribution of the pest.

In addition to Mr. DeSellem and the chief of the Horticultural Division, four inspectors each having the use of a Ford, were assigned certain areas for close inspection. Sunnyside business men as well as farmers took a keen interest in the work and urgently recommended that the pest be exterminated if possible before further spread of the insects might make such action impracticable.

The result of the survey showed that fourteen patches were infested to a greater or less degree. It was then urged upon the growers that arsenical spraying be thoroughly applied so as to kill as many of the feeding larvae as possible and these sprayings were quite thoroughly done. On account of the season of the year at the time this discovery was made, it was impossible to find pupae that had crawled from the vines into the ground for pupation and some adults were daily appearing. Quite a number of egg clusters were found indicating that the further spread of the pest was taking place rapidly.

With the information that the pest was distributed over fourteen patches, and that absolute thoroughness in carrying out the methods of eradication was vitally essential to get results, it was decided during the forenoon of July 8th, to call a meeting of the interested potato growers for that evening. The president of one of the Sunnyside banks assisted in the calling of the meeting by prevailing upon the telephone company to ring a general call at noon. The meeting was held that evening at the farm home of Mr. Earl Harris, a wide awake potato grower of the district. The meeting brought out certain facts bearing on the future of potato growing in the Yakima Valley. With approximately 5,000 acres producing annually about 3,000 cars of this crop in the Yakima Valley, it took only a few minutes discussion to convince all present that to allow an unrestricted spread of the pest throughout the valley would mean an annual cost of $15,000 to $18,000 in control measures or greater loss if allowed to feed unmolested on the crops. It is another example of community interest in the control of pests and diseases and in this, as well as in the pear blight control work, the Sunnyside farmers have proved themselves to be able to see the need for community action in the control of these serious pests so likely to affect the value of the crops of the district.

It was this spirit of healthy cooperation and the desire to exterminate, if possible, the Colorado Potato Beetle from the Yakima Valley that made the vote unanimous for the organization of the Sunnyside Potato Protective Association. Mr. W. O. Crow was elected president and Earl Harris, secretary. The association has already accomplished much good for that locality and with the aid of our inspectors it is planned to later take up the study of educational phases of potato growing such as the selection and growing of seed potatoes, irrigation practices, harvesting, grading, etc., that go to make potato growing more profitable.

Following out the desire of the growers in so far as it is possible, an attempt towards the extermination of the pest has been carried out. Spraying of the infested patches was the first step taken in order to kill many of the larvae and the new larvae from egg clusters later as they are hatched. To supplement the spraying, the fourteen patches were carefully gone over and hand picked to destroy the adults as well as any larvae visible.

It must be admitted that the complete eradication of the pest after having a foot hold in fourteen patches could hardly be expected, however, if the work being done really accomplishes that, it will be a saving to the Yakima potato growers of thousands of dollars. On the other hand, if there happens to be a few beetles escape this season, certainly vigorous action early next season should be successful in practically cleaning up this pest which has already proved to be a ravenous feeder on potato plants in the Sunnyside district. The results of hand picking the beetles daily for four weeks is shown herewith and is quite encouraging in that the daily catch ranged from 358 beetles the first day to one adult the last day. The figures indicate that the result of the work done so far has been very successful in that it so nearly approaches our desire to see the pest eradicated in this district.

CATCH OF COLORADO POTATO BEETLES, SUNNYSIDE, WASH.

FOR WEEK ENDING JULY 22ND.

NAME	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
John Eubanks	268	88	88	85	79	85
John Brown	....	1	....	....	....	....
Earl Harris	5	6	1	1	12	9
S. F. Smith	19	7	8	8	42	5
W. O. Crow	....	....	....	....	....	....
S. Kostenbader	....	....	3	3	2	10
Paul Sapp	4	2	....	....	3	2
P. J. Lichty	1	....	....	....	....	....
Ed. Brockway	2	2	1	1	2	7
A. O. Rader	43	16	7	7	19	23
H. D. Smith	11	1	8	8	....	5
J. H. Benning	3	4	3	3	3	4
G. H. Mowen	....	10	1	1	1	1
M. Padelford	....	....	....	....	....	....
Clyde Atkinson	2	....	2	....	1	....
Totals	358	137	122	117	164	151

Catch of Colorado Potato Beetles—Concluded.

FOR WEEK ENDING JULY 29TH.

NAME	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
J. Eubanks	120	50	30	19	3	10
John Brown						
Earl Harris	9	21	7	10		1
S. F. Smith	27	8	13	12	10	27
W. O. Crow		1				
S. Kostenbader	12	3	9	8	5	5
Paul Sapp	12	4	4	1	3	
P. J. Lichty				2		
Ed. Brockway	16	6	4			2
A. O. Rader	77	61	28	16	9	
H. D. Smith	7		1			
J. H. Benning	2					
G. H. Mowen	2	1				
Clyde Atkinson			2			
Totals	284	155	98	68	30	45

FOR PERIOD ENDING AUGUST 5TH.

NAME	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
John Eubank		2	1		2	
Earl Harris						
W. O. Crow						
S. F. Smith	12	15	11	4	1	3
Sol Kostenbader						
Ed. Brockway						
A. O. Rader	7			1		
G. H. Mowen						
H. D. Smith	2					
Paul Sapp	1					
J. H. Benning						
Clyde Atkinson						
Totals	22	17	12	5	3	3

FOR PERIOD ENDING AUGUST 12TH.

NAME	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
John Eubank						
Earl Harris						
S. F. Smith	5	1				1
W. O. Crow						
S. Kostenbader	1					
Paul Sapp						
P. J. Lichty						
Ed. Brockway						
A. O. Rader			2			
H. D. Smith	1		1			
J. H. Benning						
G. H. Mowen						
Henry Stalhut						
Clyde Atkinson						
Totals	7	1	3			1

INSECTICIDES AND FUNGICIDES.

Section 6 of the Horticultural law makes provision for a state insecticide and fungicide board, and it was made the duty of this board to analyze and report upon any horticultural insecticides and fungicides. The board now consists of Dr. Ira D. Cardiff, director of the experiment station; Dr. F. D. Heald, plant pathologist; Prof. Geo. A. Olson, state chemist; Dr. A. L. Melander, entomologist, secretary; T. O. Morrison, chairman.

Forty-seven samples of spray material were sent to the state chemist by members of the horticultural division. These were analyzed by Prof. Olson and the results of his analysis circularized among the horticultural inspectors who in turn gave out the information to interested growers.

Manufacturers of spray materials are generally trying to comply with the law in their offering for sale in the State of Washington any of their horticultural insecticides or fungicides. The fact that any of these materials, if adulterated or misbranded within the meaning of the law, are very likely to be found by state or federal officials has stimulated manufacturers to exercise care in this connection.

CONFERENCE OF HORTICULTURAL INSPECTORS.

A conference of the inspectors at large for the horticultural division was held at the State College April 10, 11 and 12. The object in holding the conference was for the purpose of getting better acquainted with the faculty members of the experiment station and to meet with them in their laboratories for discussion of pests and diseases injurious to horticulture. We are especially indebted to the professors for giving us almost their entire time during the three days conference and for the scientific assistance given to aid us in our field work.

The program for the conference was outlined and special problems were taken up in their order under the following general subjects:

Regulatory work.
Miscellaneous insects.
Ways in which our horticultural inspectors can cooperate with the experiment station men.
Sprays.
Miscellaneous fungi.
Potato troubles:
    (Insect pests).
    (Fungous diseases.)
    (Seed selection.)
Codling moth.
San Jose scale.

GRADE AND PACK CONFERENCES.

Section 17 of the Horticultural Laws authorizes a public hearing annually with horticulturists in order that a full and impartial opportunity may be given all interested districts to be heard in the establishing of grading rules for apples for the ensuing year. Sections 16 and 17 are closely related in that they provide for a "Washington Standard Pack" for apples; provide for the defining and adoption of the grade requirements, and specify what constitutes proper branding of closed packages of the same.

In April, 1915, after the passage of the new horticultural law, the Assistant Commissioner in charge of the horticultural division met in conference with growers and shippers in Spokane at a regular meeting of the Growers' Council. As a result of the conference rules and regulations were adopted by the Assistant Commissioner and Acting Commissioner of Agriculture under authority of Section 17.

In order to adopt grading rules for the season of 1916 a conference was held in Spokane December 20, 1915. The following will show the nature of the announcement and the general rules governing the conference:

"The Commissioner of Agriculture is authorized and directed by Section 17 of the Horticultural Law to, in the month of December of each year, make, adopt, issue and publish general rules and regulations governing the grade and pack of apples, and establish and define grades for the ensuing calendar year. The Commissioner is authorized by law to advise and consult with fruit growers and officers of fruit growers' associations, and to provide for public hearing or convention so as to insure an impartial opportunity for all interested districts to be represented.

The "Washington Standard Pack" grading rules for apples adopted under authority of the horticultural law, were adopted in Spokane April 28, 1915, at a meeting of the Northwest Growers' Council.

The 20th of December, 1915, has been selected as the date for the next general meeting of apple growers and shippers to decide on rules for the season of 1916, and it is sincerely hoped that the wishes of the majority of the fruit growers may be had with reference to amendments to the rules now in effect. In order to get the wishes of the fruit growers themselves and thus have public sentiment back of the grading rules, we are asking that local or district meetings be held in advance of the final conference, and that these districts be represented at the final conference. The law specifies that representations shall be on a tonnage basis. As the figures for the 1915 apple shipments are incomplete at this date we are assuming that the 1914 apple shipments taken as a basis will be a fair basis of representation for all districts.

The following is the apportionment we are making as a basis of representation:

Chelan, Okanogan, Douglas and Grant	63 votes
Kittitas	1 vote
Yakima	52 votes
Benton and Franklin counties	2 votes
Spokane	5 votes
Columbia, Garfield and Walla Walla	3 votes
Stevens and Lincoln	2 votes
Skamania county	1 vote
Klickitat county	1 vote
Whitman county	1 vote

The Plan of Procedure.

1. Local or district meetings.
2. Election of chairman and secretary of meeting.
3. Designation of boundaries of district.
4. Approximate number of cars of apples represented by the district taking the 1914 crop as a absis.
5. Proposed amendments.
6. Adopted amendments to be submitted in writing.
7. Amendments to be signed by chairman and secretary of meeting and presented to the grading conference on December 20th, by delegates selected at the local meeting.

1. We ask that in the consideration of amendments to the apple grading rules that local or district meetings be open to all interested apple growers whether or not they be members of the organization, association or community organization by or through which the meeting has been called. I am asking that our inspectors-at-large superintend these meetings by naming the date, place, and checking up the amendments offered in order that there may be no confusion as to the delegates that will be acceptable at the Spokane meeting.

2. In calling the meeting together, in our opinion there should be a chairman and secretary elected.

3. The boundaries of the district represented by the meeting should be defined at least by names of localities within the district in order that representation within the districts may be as nearly in proportion to the apple tonnage as possible.

4. That the meeting vote to adopt or reject any amendments offered.

5. That the adopted amendments be in writing and attached to a copy of the printed grading rules so that there may be no mistake as to the meaning of the amendments.

6. In submitting amendments for consideration at the central meeting December 20th, proposed amendments should be submitted in writing by a delegate or delegates selected at the local meeting or, if it is the desire of the meeting, the written amendments may be submitted by registered mail.

7. We ask that the secretary and chairman sign the amendments that are offered by their district and make statement showing the number of growers present at the local or district meeting.

On account of limited amount of space allotted this division the apple grading rules as adopted for the seasons of 1915 and 1916 are necessarily omitted from this report.

NURSERIES AND NURSERY STOCK.

Of the number of nurseries licensed for the period July 1st, 1915, to July 1, 1916, sixty-one failed to renew their licenses. Eighty-eight nursery licenses are in effect for the period July 1st, 1916, to July 1st, 1917.

Nurseries have been inspected whenever possible during the growing season to locate any infection that may have been present on the stock above the ground line. In so far as is practical, the final inspection is done at "digging time" when it is most convenient to examine for root diseases, and if it is not done then the inspectou is done at pont of destination.

The inspection of the nurseries and nursery shipments in this state is no small task when carefully done, but does not, however, occupy as much time as some of the less important details of our work. The inspection of nursery stock from foreign countries is done by this division under the general supervision of the Federal Horticultural Board.

This report includes in tabulated form the nursery deliveries and foreign nursery stock imported and inspected by this division.

FRUIT CROP ESTIMATES.

During the past four seasons this division has issued from two to four fruit crop reports during the growing season and there has been considerable interest shown in reports of this kind. During the present season (1916) we have issued two reports, the first July 3rd, and the second September 1st, in co-operation with the Fruit Growers Agency.

The Fruit Growers Agency has been receiving the active support of the office of markets and rural organization of the U. S. Department of Agriculture and in the compilation of the fruit crop estimates we have tried to furnish some assistance to this marketing plan. The reports have been mimeographed in each case and copies mailed to growers and shippers on our mailing lists and to a great many parties outside the state at their request. In making the estimates and collecting the data the inspectors at large were instructed to look over their horticultural districts preparatory to making their estimates and to call on shippers and shippers' organizations accustomed to making crop estimates in order that this final estimate might represent a fair average. In this connection I must say that our inspectors in the commercial apple districts by their practical handling of this matter and other details of their work have my personal admiration and I am sure that of many of their growers.

I believe that our crop estimate in being used as an invoice of the commercial apple crop of the state will be of considerable value to the different marketing agencies.

THE LAW OF COMMISSION MERCHANTS.

Our attempt to enforce the law of commission merchants was discontinued early in the season 1916 at the time the law was declared by the Supreme Court to be null and void.

That the law as drawn is hardly practical for present conditions can be readily seen by considering the following important points:

1. Definition of commission merchant is faulty in that fifty-one per cent of a firm's business must be on a commission basis to come

within the definition of commission merchant. No provision is made for cooperative organizations, and yet as the law is drawn these organizations come within the meaning of commission merchant.

2. Requiring payment within ten days for certain firms in special markets and under favorable conditions would be possible but would be practically impossible for large shippers and organizations to comply with without being able to take into consideration the distance to market, and whether or not the shipment consisted of all or a portion of a variety pool.

3. A special appropriation would be necessary to carry out the provisions of such a law. So far we have had no appropriation for this purpose.

It may be of some interest in this connection that the following opinions concerning the law of commission merchants were written by the State Supreme Court.

	Washington Decisions.
Ferguson-Hendrix Co. v. Fidelity & Deposit Co.	Vol. 37, No. 7, Page 392
State v. Bowen & Co.	Vol. 44, No. 1, Page 10
State v. J. B. Powles & Co.	Vol. 47, No. 9,

Since the law of commission merchants has been declared null and void it would hardly be necessary to give this explanation were it not for the fact that we often hear of some one advocating a law of commission merchants. We know of a number of instances where a good workable law could have been the means of bringing an untrustworthy commission merchant to do that which the dependable commission merchant would do.

To any legislators who contemplate proposing legislation for the regulation of this class of trade I would urge that it first be submitted to the Office of Markets and Rural Organizations of the U. S. Department of Agriculture, Washington, D. C.

The following are some of the prosecutions brought under the Horticultural Law:

NAME AND ADDRESS OF PARTY PROSECUTED	Basis of Complaint	Verdict	Court	Date of Verdict
O. M. McKinney, Walla Walla, Wash.	Offering for sale infected fruit	$25 and costs	Justice (W. W.)	7-19-15
Elmer Rector, Freewater, Oregon	Importing and selling infected fruit	$25 and costs	Justice (W. W.)	7-17-15
J. T. Walker, Freewater, Oregon	Importing and selling infected fruit	$25 and costs	Justice (Dayton)	9-27-15
John Pulliam, Dayton, Wash.	Selling infected fruit	$25 and costs	Justice (Waitsburg)	9-10-15
B. Frank Smith, Pomeroy, Wash.	Selling infected fruit	Prosecution dropped by county attorney.		
F. L. Phelps, Freewater, Oregon	Importing and selling infected fruit	Not apprehended		
J. F. Pittman, Freewater, Oregon	Importing and selling infected fruit	Not apprehended		
Geo. Tilson, Freewater, Oregon	Importing and selling infected fruit	Not apprehended		
D. Biggle, Freewater, Oregon	Importing and selling infected fruit	Prosecution dropped by the county attorney.		
C. E. Melby, Madison Park Floral Co., Seattle	Conducting nursery business without first obtaining a license.	$25 and costs	Justice Judge Crinker's Court	4-25-16
W. D. Miller, Kettle Falls	Interfering with a horticultural inspector in the discharge of his duty.	Guilty	Superior	Nov. 1915
Pacific Fruit & Produce Co., No. Yakima.	Shipping infected fruit	$100 and costs, totaling $127.75	Justice	
Carried over to			Superior	4-3-16
J. M. Perry & Co.	Shipping infected fruit	Guilty ($95.05)	Justice	Hearing 11-30-15 (under advisement) Judgment 12-14-15
Mr. Jas. Day	Refusal to disinfect	Guilty ($95.30) (Appealed to superior court.)	Justice	Hearing 6-10-15 Judgment 6-21-15

ORCHARD ACREAGE OF WASHINGTON.

There have been many inquiries coming to this office in regard to the fruit acreage of the different districts of the state, and as it is of particular interest to those engaged in the marketing of the fruit crop we are including herewith data covering this matter in a general way. The data for North Central Washington was collected by the league-state inspectors and compiled by the Wenatchee North Central Washington Growers' League.

Only the totals are here shown from this report. The figures for the remaining districts of the state were revised by the inspectors at large for their respective districts.

In considering the fruit tree acreage of the state it will probably be of most value to shippers and shippers' organizations to have this data for the commercial districts grouped separately from that of the counties having quite a large number of fruit trees, but which are either planted as home orchards or are so isolated in small lots as to be of very little importance commercially.

GENERAL.

In writing this general report of the work of the horticultural division the assistant commissioner of agriculture, in charge of this division, deeply regrets that lack of space prevents the printing of the very excellent reports of the ten inspectors-at-large. The report of each inspector and the work he has done in his respective district since the issuance of our last report speaks for itself the true character of his work and the services he has performed. As head of this division it is with a great deal of pride and satisfaction that I have attempted to explain the lines of work and the results we have accomplished together. The conscientious endeavor on the part of the field inspectors to make their efforts of real service to the fruit and vegetable growers has been a great source of satisfaction to me. I am glad indeed to acknowledge the valuable work of these men.

Among some of the things that would have been of great value in this report are several field problems that men of this division have been working on. Mr. Luke Powell, inspector-at-large, Prosser, Washington, carried out a series of demonstrations for the control of grape and apple mildew, tests in pollination of cherries, and tests in pear stocks more or less resistent to blight.

Mr. O. T. Clawson, inspector-at-large, Wenatchee, Washington, has made a survey of cover crop conditions in more than fourteen hundred orchards of North Central Washington. He has some valuable data on the subject of alfalfa in the orchard which would make an excellent bulletin. Mr. Clawson and his assistant, Mr. A. L. King, have recorded some interesting data concerning the life history of the codling moth.

Mr. F. E. De Sellem, inspector-at-large, North Yakima, has carefully carried out some potato demonstrations with reference to disease and the growing of seed potatoes which would make material for a useful bulletin. Mr. De Sellem has also a codling moth demonstration tract of eighteen acres divided into fifty-two plots that will bring out some very interesting comparisons of materials used and in the number of applications. Blue prints have been made of this demonstration and all details are being carefully recorded.

Mr. C. W. Gilbreath, inspector-at-large, Walla Walla, carried out successful demonstrations in the control of apple mildew and its effect on the setting of fruit buds. He has also made some interesting observations and notes on thinning and on the use of insecticides for the control of San Jose Scale. Mr. H. W. Samson, inspector-at-large, Spokane, Wash., has data on certain phases of Bacillus amylovorus and apple scab that would also make interesting reading.

There are yet other lines of work in which the inspectors of this division have been interested in and in many instances have worked long after the regular day's work was done in order to complete the task before them.

We are sure that the horticultural division has given the best service that was within us and we have conscientiously tried to be of assistance to the horticultural industry of the state.

Respectfully submitted,
T. O. MORRISON,
Assistant Commissioner of Agriculture,
In Charge, Division of Horticulture.

Date? 1910?

BEARING FRUIT TREES.

COUNTIES	Apples	Pears	Peaches	Apricots	Plums and Prunes	Cherries
Chelan Douglas Okanogan Grant	*948,317	*44,709	*68,664	*20,366	*7,748	*20,694
Adams	6,000	2,300	1,500	300	600	1,500
Asotin	*16,000	*4,800	*33,000	*2,200	*7,500	*35,000
Benton	*456,060	*82,840	*51,420	*14,600	*14,900	*29,700
Clallam	32,000	1,000	....	....	1,600	*1,500
Clarke	43,000	18,000	6,000	....	*590,780	4,000
Columbia	*44,000	....	*6,000	....	....	*5,000
Cowlitz	17,000	3,000	....	....	3,750	2,000
Ferry	*14,000	1,500	....	....	1,000	1,800
Franklin	*70,000	*8,000	*10,000	1,000	1,000	*1,000
Garfield	*4,000	*1,920	*15,000	....	....	....
Island	36,000	....	....	....	....	....
Jefferson	16,000	1,200	....	....	3,500	600
King	112,535	37,200	10,575	....	27,500	38,625
Kitsap	8,000	3,000	....	....	....	4,000
Kittitas	*128,000	....	....	....	....	....
Klickitat	*425,680	*6,000	*18,000	*25,000	*1,500	*1,900
Lewis	46,000	....	....	....	3,200	11,500
Lincoln	*65,000	*16,300	*34,000	....	*6,000	*3,500
Mason	11,000	2,400	500	....	2,400	2,300
Pacific	4,000	....	....	....	150	....
Pend Oreille	*9,000	....	....	....	2,700	900
Pierce	64,651	18,299	....	....	....	*14,165
San Juan	42,000	*5,400	....	....	6,800	2,400
Skagit	48,000	11,500	....	....	6,500	7,500
Skamania	*72,000	....	1,000	....	*9,500	*1,500
Snohomish	68,000	12,000	....	....	5,500	9,000
Spokane	*1,066,700	....	....	....	....	....
Stevens	*190,000	*15,000	*12,000	....	*11,700	*6,500
Thurston	46,000	9,000	600	....	34,000	8,600
Wahkiakum	4,850	3,700	2,700	....	5,500	1,250
Walla Walla	*184,000	....	*4,800	....	*25,000	....
Whatcom	29,600	3,700	....	....	5,600	*8,300
Whitman	*148,000	*8,100	*88,000	*5,700	*31,000	*9,800
Yakima	*1,198,000	*151,008	*234,480	....	*34,750	*6,750
Totals	5,608,598	397,320	593,289	69,166	821,078	241,284

* Grown in commercial quantities.

FRUIT TREES FIVE YEARS AND YOUNGER.

COUNTIES	Apples	Pears	Peaches	Apricots	Plums and Prunes	Cherries
Chelan Douglas Okanogan Grant	*1,733,245	*83,814	*39,718	*20,335	*3,348	*7,309
Adams	7,000	2,400				
Asotin						
Benton	*3,000					
Clallam	1,000	1,000			200	*250
Clarke	7,000	2,000	1,000		*131,500	1,000
Columbia	*35,000					*7,000
Cowlitz	4,000	2,000			2,800	500
Ferry	*14,000					
Franklin						
Garfield		*2,880			*5,000	
Island	18,000					
Jefferson	2,000	300				700
King	29,500	24,600	8,000		9,000	22,000
Kitsap	2,000	3,000				3,000
Kittitas	*32,000					
Klickitat	*38,320	*1,700	*2,000	*5,800		100
Lewis	8,000					
Lincoln	*21,000	*1,320				
Mason						
Pacific	3,400					
Pend Oreille	*3,600	850	300		2,700	
Pierce	5,000	1,000				*6,000
San Juan	8,000	1,600				1,100
Skagit	12,000	7,000				
Skamania	*11,700		500		*4,000	500
Snohomish	18,000	8,500				600
Spokane	*538,300					
Stevens	*140,000	*8,000				
Thurston	3,500	12,000				
Wahkiakum	1,700	1,250	1,200		1,500	800
Walla Walla					*12,500	
Whatcom	11,000	4,200				*3,800
Whitman	*3,800	*1,100		*800	*1,750	*4,400
Yakima	*1,197,520					
Totals	3,952,585	170,414	52,718	26,935	174,298	59,059

* Grown in commercial quantities.

WENATCHEE-NORTH CENTRAL WASHINGTON DISTRICT.

COMPRISING COUNTIES OF CHELAN, DOUGLAS, OKANOGAN AND GRANT.

DISTRICT AND ACREAGE		Age of Trees	Apples	Crab Apples	Quinces	Pears	Apricots	Plums	Cherries	Peaches
Wenatchee	4,630.47 acres	1-3 years......	44,408	744	3	6,620	1,928	750	187	235
		4-5 years......	55,169	292	9	3,672	1,755	358	298	976
		6-7 years......	62,421	191	8	2,854	3,187	1,308	1,611	4,101
		8-9 years......	48,390	107	13	3,146	2,301	867	2,467	5,320
		10 and older...	90,031	299	146	4,889	2,075	2,188	5,794	19,781
Olds Station	1,551.52 acres	1-3 years......	10,848	75	....	1,608	383	12	79	4
		4-5 years......	20,179	14	....	543	107	....	127	85
		6-7 years......	23,582	10	2	1,184	291	41	211	1,585
		8-9 years......	9,588	45	1	751	841	45	207	900
		10 and older...	21,817	26	6	1,131	344	131	1,018	1,984
Monitor	1,774.92 acres	1-3 years......	10,780	24	4	2,554	228	152	8	6
		4-5 years......	25,293	....	....	1,309	108	27	13	5
		6-7 years......	30,263	12	2	1,858	648	55	68	467
		8-9 years......	19,661	38	....	720	611	225	317	1,832
		10 and older...	9,405	3	3	440	141	34	156	350
Cashmere	3,490.42 acres	1-3 years......	24,210	12	1	4,979	4	1	148	90
		4-5 years......	67,685	7	....	3,076	19	10	90	29
		6-7 years......	70,892	4	....	3,965	50	39	299	269
		8-9 years......	48,209	42	3	2,647	71	60	343	601
		10 and older...	43,674	41	11	1,399	99	149	1,171	413
Dryden	1,389.08 acres	1-3 years......	40,679	2	1	3,817	78	4	21	13
		4-5 years......	29,485	8	....	1,662	12	41	113	100
		6-7 years......	17,697	19	....	1,961	31	70	161	387
		8-9 years......	13,287	26	....	424	41	51	177	177
		10 and older...	7,998	11	....	164	8	36	154	40
Peshastin	1,638.87 acres	1-3 years......	38,827	26	6	7,211	25	39	196	55
		4-5 years......	41,265	6	....	2,445	24	57	306	146
		6-7 years......	23,230	1	....	1,613	12	47	110	184
		8-9 years......	16,875	30	....	174	6	32	184	166
		10 and older...	7,306	23	....	138	14	32	190	86

Wenatchee-North Central Washington District—Continued.

COMPRISING COUNTIES OF CHELAN, DOUGLAS, OKANOGAN AND GRANT.

DISTRICT AND ACREAGE		Age of Trees	Apples	Crab Apples	Quinces	Pears	Apricots	Plums	Cherries	Peaches
Leavenworth		1-3 years......	12,224	....	....	1,085	....	2	6	17
		4-5 years......	13,734	3	....	316	2	12	44	14
		6-7 years......	17,120	....	6	456	....	8	29	3
	721.00 acres	8-9 years......	6,037	7	3	13	....	7	12	18
		10 and older...	495	38	....	88	4	55	95	4
Malaga		1-3 years......	18,863	5	13	4,358	788	99	141	77
		4-5 years......	39,647	16	1	2,258	1,202	9	84	458
		6-7 years......	15,205	9	3	2,053	1,200	60	356	2,406
	1,902.70 acres	8-9 years......	10,106	55	1	687	989	35	101	2,696
		10 and older...	16,583	74	....	1,629	958	315	577	1,485
East Wenatchee		1-3 years......	36,778	25	1	3,152	2,390	250	271	92
		4-5 years......	106,933	27	4	2,882	2,670	68	491	4,119
		6-7 years......	60,952	6	....	2,383	2,616	220	1,407	4,166
	3,402.40 acres	8-9 years......	3,053	....	....	118	237	84	15	1,100
		10 and older...	1	....	....	....	....	....	....	....
Entiat, Orondo and Wagnersburg		1-3 years......	20,565	60	....	2,226	448	14	21	....
		4-5 years......	37,598	28	1	1,762	19	16	226	1,354
		6-7 years......	22,010	9	....	1,089	151	5	85	2,109
	1,710.25 acres	8-9 years......	15,509	68	1	1,772	243	32	405	....
		10 and older...	6,883	147	6	822	298	243	99	991
Winesap		1-3 years......	195	5	....	....	50	....	....	....
		4-5 years......	4,010	....	....	1,045	....	....	....	....
		6-7 years......	....	....	....	....	....	....	....	....
	170.35 acres	8-9 years......	2,508	....	....	55	450	....	....	575
		10 and older...	2,626	....	....	1	30	....	2	73
Chelan, Chelan Falls and Lakeside		1-3 years......	52,221	7	....	3,302	390	8	47	25
		4-5 years......	36,246	....	....	111	497	32	14	5
		6-7 years......	31,641	60	....	376	370	49	64	890
	211.23 acres	8-9 years......	13,608	....	....	14	38	5	49	216
		10 and older...	13,799	38	....	124	6	126	373	32

Wenatchee-North Central Washington District—Continued.

COMPRISING COUNTIES OF CHELAN, DOUGLAS, OKANOGAN AND GRANT.

DISTRICT AND ACREAGE	Age of Trees	Apples	Crab Apples	Quinces	Pears	Apricots	Plums	Cherries	Peaches
Pateros, Bridgeport and Gordon	1-3 years......	69,619	....	....	1,120	124	28	99	1,156
	4-5 years......	71,360	....	....	1,674	260	32	9	978
	6-7 years......	8,850	....	....	422	13	3	87	865
2,171.54 acres	8-9 years......	4,087	....	....	137	....	8	302	308
	10 and older...	2,808	23	....	924	34	135	16	73
Brewster	1-3 years......	13,075	....	....	446	815	....	20	4
	4-5 years......	43,594	....	....	222	12	....	166	277
	6-7 years......	16,228	....	....	138	10	109	187	1822
1,119.29 acres	8-9 years......	7,482	9	....	110	29	29	213	811
	10 and older...	....	....	....	....	....	....	....	....
Malott and Okanogan	1-3 years......	21,946	30	....	901	236	48	68	398
	4-5 years......	100,692	17	20	1,064	1,719	36	297	1,196
	6-7 years......	19,135	8	1	960	649	63	367	1,507
2,211.50 acres	8-9 years......	1,875	....	....	61	39	5	11	75
	10 and older...	1,800	13	....	240	17	81	79	208
Omak	1-3 years......	47,151	77	3	928	199	34	100	3,069
	4-5 years......	116,761	21	11	1,908	1,343	155	991	4,735
	6-7 years......	82,750	12	....	1,064	1,158	51	404	2,981
3,245 acres	8-9 years......	269	3	....	....	....	....	....	....
	10 and older...	490	....	....	15	....	460	....	....
Riverside and north	1-3 years......	22,776	20	....	1,214	4	....	....	222
	4-5 years......	35,648	....	2	841	257	172	105	1,799
	6-7 years......	618	....	....	18	....	....	46	607
973.48 acres	8-9 years......	901	....	....	35	....	....	100	....
	10 and older...	80	6	....	....	5	6	6	12
Methow Valley	1-3 years......	51,379	....	....	3,796	27	5	....	70
	4-5 years......	26,163	....	....	132	....	....	192	....
	6-7 years......	10,111	....	4	4	3	4	408	11
1,582.00 acres	8-9 years......	1,488	....	....	170	3	15	41	15
	10 and older...	1,368	....	....	....	75	....	....	12

Wenatchee-North Central Washington District—Continued.

COMPRISING COUNTIES OF CHELAN, DOUGLAS, OKANOGAN AND GRANT.

DISTRICT AND ACREAGE		Age of Trees	Apples	Crab Apples	Quinces	Pears	Apricots	Plums	Cherries	Peaches
Moses Coulee	745.00 acres	1-3 years......	510	....	....	....	540	....	....	....
		4-5 years......	18,620	....	....	....	505	....	....	12,178
		6-7 years......	19,809	....	....	94	20	....	....	8,915
		8-9 years......	2,705	....	....	....	200	....	....	88
		10 and older...	537	41	....	61	....	130	32	....
Grant County	5,170.74 acres	1-3 years......	176,248	250	....	2,644	684	343	1,146	1,095
		4-5 years......	128,010	50	....	5,436	598	589	1,240	4,641
		6-7 years......	11,531	5	....	18	278	5	148	....
		8-9 years......	....	....	....	....	....	....	....	....
		10 and older...	....	....	....	....	....	....	....	....
Totals.............................	41,711.86 acres	....	2,678,172	3,390	200	128,523	40,701	11,096	28,008	108,382

Spokane County.

District		
East Farms	92,000	Apples
West Farms	24,000	"
Pasadena Park	16,000	"
Opportunity	192,000	"
Pierce	12,000	"
Vera	120,000	"
Greenacres	58,000	"
Trentwood	24,000	"
Otis	176,000	"
Arcadia	560,000	"
Foothills	18,000	"
Pleasant Prairie	16,000	"
Green Bluffs	32,000	"
Hanauer Graves	208,000	"
Miscellaneous	72,000	"

Two thirds of the apple trees in Spokane County classed as five years and older.

Kittitas County.

Apples, 5 years and younger	400	Acres
Apples, 6 years and older	1,600	"
Mixed and family orchards	1,625	"
	3,625	"

Yakima County.

Apples, 5 years and younger	14,975	Acres
Apples, 6 years and older	24,969	"
Peaches and apricots	1,954	"
Pears	1,573	"
Prunes and plums	278	"
Cherries	75	"
Family orchards	1,788	"
	45,621	"

PERCENTAGE OF VARIOUS VARIETIES, 1916.

Yakima County.

Variety	*Percent*	*Acreage*
Winesap	15.52	6,201
Jonathan	14.81	5,916
Ben Davis	12.77	5,103
Spitz	6.64	2,654
Mo. Pippin	6.45	2,578
Yellow Newtown	5.92	2,366
Rome Beauty	5.51	2,203
Gano	3.4	1,339
Black Twig	2.69	1,075
Stamen Winesap	2.48	991
Grimes Golden	2.46	986
Ark. Black	2.24	896
W. W. Pearmain	2.06	824
Red Cheek Pippin	1.56	626
York Imperial	1.34	537
Delicious	1.47	587
Wagener	.27	107
Odd varieties	12.41	4,954
	100	39,944

FRESH FRUIT SHIPMENTS—1915.

COMMERCIAL PRODUCTION OF FRUITS AS SHOWN BY CARLOAD AND LESS THAN CARLOAD SHIPMENTS. FRUIT MANUFACTURED INTO BY-PRODUCTS AS SHOWN ELSEWHERE IN THIS REPORT.

COUNTIES	Apples	Pears	Peaches	Grapes	Plums and Prunes	Apricots	Cherries	Water-melons	Canta-loupes	Toma-toes	Strawberries	Other Berries	Mixed Fruit
Asotin	6 cars	3 cars	61 cars		11 cars	2 cars	28 cars	8 cars	3 cars	24 cars	2 cars	1 car	
Benton	101 cars	58 cars	265 cars	19 cars	9 cars	5 cars	10 cars	4 cars	25 cars	5 cars	52 cars	4 cars	
Chelan	5,400 cars	850 cars	175 cars		80 cars	155 cars	80 cars						
Douglas													
Okanogan													
Grant													
Columbia	31 cars		5 cars		2 cars		2 cars						
Franklin	6 cars		6 cars										
Garfield	11 cars	8 cars	54 cars		22 cars	2 cars	12 cars	2 cars	1 car	1 car	2 cars		
Kittitas	60 cars												
Klickitat	48 cars	5 cars	4 cars	2 cars		2 cars	1 car	3 cars		26 cars	58 cars		
Lewis											3 cars		
Lincoln	10 cars	15 cars	10 cars				3 cars						
Spokane	364 cars	7 cars			52 cars		9 cars				57 cars		32 cars
Stevens	45 cars						2 cars						12 cars
Thurston	3 cars												
Walla Walla	108 cars	3 cars	11 cars	2 cars	196 cars		37 cars	2 cars	5 cars	3 cars		4 cars	14 cars
Yakima	3,300 cars	943 cars	1,500 cars	40 cars	150 cars	10 cars	130 cars	150 cars	300 cars	25 cars	15 cars	4 cars	700 cars
Clarke	16,500 bxs.	12,850 bxs.	1,600 bxs.	2,800 baskets			1,500 bxs.		500 crates	2,700 bxs.	16,300 crates	2,000 crates	
Cowlitz	12,000 bxs.	2,700 bxs.					240 bxs.				1,800 crates	1,500 crates	
King											20,111 crates		
Kitsap	5,000 bxs.						12,000 bxs.			3,000 bxs.	20,000 crates		
Mason				3,000 baskets									
Pacific	1,800 barrels of cranberries												
Pierce	2,225 bxs.				400 crates		790 bxs.				12,870 crates	340,687 crates	
Skamania	1,250 bxs.	300 bxs.					250 bxs.			450 bxs.	3,000 crates		
Snohomish											10,000		
Whatcom													
Totals	9,551 cars	1,416 cars	2,092 cars	56 cars	523 cars	176 cars	321 cars	164 cars	336 cars	90 cars	345 cars	586 cars	758 cars

EXPORTS OF FRUITS BY COUNTIES.

SHIPPED FROM COUNTIES AS LISTED BELOW, SEASON 1914.

(The figures below give the number of standard size packages.)

NOTE: Pacific county exported 4,000 barrels cranberries and Clarke county exported 2,000,000 pounds dried prunes.

COUNTIES	Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Water-melons (pounds)	Canta-loupes	Grapes	Toma-toes	Straw-berries	Other berries	Mixed Fruit
Asotin	7,580	5,040	19,530	14,000	8,820	25,200				2,200			
Cars	12.0	8.0	19.5	14.0	8.8	21.0				2.0			
Benton	84,167	33,749	211,615	5,943	2,576	5,670	382,060	48,666	34,212	12,575	41,307	3,219	
Cars	133.6	53.5	211.6	5.9	2.6	4.7	12.7	139.0	26.8	11.5	65.5	5.1	
Chelan	3,340,666	157,988	272,683	39,723	103,145	257,309							
Cars	5,302.6	250.5	272.6	39.7	103.1	214.4							
Clarke	12,000	3,000							3,500	3,000	5,000	7,000	
Cars	19.1	4.8							2.6	2.7	7.9	11.1	
Columbia	18,900		3,150			1,260						750	
Cars	30.0		3.2			1.0						1.2	
Cowlitz	1,500	550				300							
Cars	2.3	0.9				0.3							
Douglas	22,618	847	408	1,020	363	168							
Cars	35.9	1.3	0.4	1.0	0.4	0.1							
Franklin	2,500		3,600				2,000	500	1,000		1,500		
Cars	3.9		3.6				0.1	1.0	0.8		2.4		
Garfield	4,417	3,780	7,560	4,000	630	3,780	90,000		2,400	600		750	
Cars	7.1	6.0	7.6	4.0	0.6	3.2	3.0		1.8	0.6		1.2	
Grant	13,493	519	14,355	2,760	400								
Cars	21.4	0.8	14.3	2.7	0.4								
Kittitas	46,620	445	370			35	3,200	29			18	112	
Cars	74.0	0.7	0.4			0.08	0.1	0.1			0.1	0.2	
Klickitat	35,000	500	5,500	15,000	2,000	1,500	72,000		3,000	5,500	32,000	500	
Cars	55.5	0.8	5.5	15.0	2.0	1.3	2.4		2.3	5.0	50.8	0.8	
Lewis										1,100		2,250	
Cars										1.0		1.6	
Lincoln	11,250	9,450	15,750	6,000		1,260			6,000				
Cars	17.8	15.0	15.7	6.0		1.0			4.6				
Mason									13,000				
Cars									10.0				

Okanogan	144,888	5,506	7,782	39,210	7,180	80	...	...	...	...	...	...	...
Cars	229.9	8.8	7.8	39.2	7.2	0.1	...	...	...	...	...	...	...
Pierce	166	...	2,640	...	...	518	...	...	...	11,000	35,700	347,900	...
Cars	0.2	...	2.6	...	...	0.4	...	...	...	10.0	56.6	552.3	...
Skamania	26,378	200	500	...	...	...	...	...	100	100	2,870	100	...
Cars	41.8	0.3	0.5	...	...	...	...	...	0.1	0.1	4.5	0.1	...
Spokane	277,200	15,750	5,670	53,000	...	7,560	30,000	300	...	6,000	35,000	41,300	...
Cars	440.0	25.0	5.6	53.0	...	6.3	1.0	1.0	...	5.5	55.5	65.5	...
Stevens	47,880	2,520	6,000	1,000	...	6,300	...	...	...	...	630	...	...
Cars	76.0	4.0	6.0	1.0	...	5.4	...	...	...	...	1.0	...	...
Walla Walla	88,200	5,040	18,270	29,000	5,040	25,200	60,000	1,500	7,200	17,000	2,800	1,500	35,700
Cars	140.0	8.0	18.2	29.0	5.0	21.0	2.0	4.8	5.5	15.5	4.4	2.4	59.5
Whitman	63,000	...	...	...	...	...	...	...	...	2,200	...	...	...
Cars	100.0	...	...	...	...	...	...	...	...	2.0	...	...	...
Yakima	3,303,090	449,820	905,310	148,000	16,380	63,000	3,750,000	105,000	59,500	12,988	3,500	...	...
Cars	5,243.0	714.0	905.3	148.0	16.4	52.5	125.0	300.0	45.7	11.7	5.5	...	...
Totals......	7,551,508	694,764	1,500,643	358,656	146,534	399,340	4,389,260	155,995	129,912	74,218	160,325	405,381	35,700
Cars	11,986.5	1,102.8	1,500.6	358.7	146.5	332.7	146.3	445.6	99.9	67.4	254.5	643.4	59.5

EXPORT OF VEGETABLES BY COUNTIES IN STATE OF WASHINGTON.

SHIPPED FROM COUNTIES AS LISTED BELOW, SEASON 1914.

(The figures below give the number of standard size packages.)

COUNTIES		Potatoes	Onions	Egg Plant	Cabbage	Cucumbers	Rhubarb	Carrots	Corn	Squash (pounds)	Mixed Vegetables	Asparagus	Celery
Benton		5,364	151	5,400	1	2,300	200	255	1,528	30,000	20	6,500	1,200
	Cars	21.4	0.1	10.8		4.6	0.3	1.0	6.0	1.0	0.1	10.2	4.0
Clarke		46,000	8,000	1,000	1,200	1,000	120				200	2,520	1,000
	Cars	184.0	31.0	2.0	6.0	2.0	0.2				0.4	4.0	3.3
Columbia		2,500						500		30,000			
	Cars	10.0						2.0		1.0			
Cowlitz		55,000									800		
	Cars	220.0									1.8		
Kittitas		30,000						500	1,000			1,260	
	Cars	120.0						2.0	4.0			2.0	
Klickitat		4,000						500	500			1,260	
	Cars	16.0						2.0	2.0			2.0	
Pierce		16,200			8,400	3,000	22,200				8,400		
	Cars	108.0			42.0	6.0	37.0				14.0		
Skamania		4,400	900						500				
	Cars	17.6	3.6						2.0				
Spokane		40,500	250		1,000			250			61,800		600
	Cars	162.0	1.0		5.0			1.0			108.0		2.0
Wahkiakum		1,600			400						1,000		
	Cars	6.4			2.0						1.3		
Walla Walla		9,250	117,250	1,500	10,600	2,000	9,000	1,000	1,500		70,200		2,400
	Cars	37.0	469.0	3.0	53.0	4.0	15.0	4.0	6.0		117.0		8.0
Yakima		426,000	250			4,000		1,000	2,000			5,040	600
	Cars	1,704.0	1.0			8.0		4.0	8.0			8.0	2.0
Totals		640,814	126,801	7,900	21,601	12,300	31,520	4,005	7,028	60,000	142,420	16,580	5,800
	Cars	2,600.0	504.2	15.8	108.0	24.6	52.5	16.0	28.0	2.0	236.7	26.2	19.3

COMMERCIAL SHIPMENTS OF VEGETABLES, 1915.

(Figures indicate number of standard size packages.)

COUNTIES	Potatoes	Onions	Egg Plant	Cabbage	Cucumbers	Celery	Rhubarb	Carrots	Green Corn	Other Vegetables	Mixed Vegetables	Nuts	Casabas	Asparagus	Rutabagas and Turnips
Spokane	27,000														
Cowlitz	62,000			300											
Clarke	78,000	500		435	2,500							13,000 lbs			
Klickitat			700									10,000 lbs	900		
Skamania	40,000	750													
Pierce	41,485			4,000	3,600	8,200	3,689	15,000		2,500					
Thurston	2,000														
Benton	27,000		3,000												
Columbia										740					
Walla Walla	30,100	184,900	470	31,525	13,375	700	41,720	2,600			127,150				
Asotin		680	50		14,000	400	40			100					
Yakima	375,000	4,000	2,940	2,600			400	6,000	4,800					2,400	22,500
Kittitas	34,250														

IMPORTATION OF FRUIT INTO WASHINGTON.

FROM ALL POINTS OUTSIDE OF STATE DURING SEASON OF 1914.

(Figures indicate number of standard size packages.)

COUNTIES	Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Oranges	Lemons	Grapes	Bananas	Cantaloupes	Watermelons (pounds)	Berries	Tomatoes	Grape Fruit	Mixed Fruit
Asotin	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2,400
Clarke	500	......	......	100	......	50	1,000	500	300	1,000	400	15,000	1,250	300	......	......
Columbia	......	......	......	......	......	......	750	250	......	350	......	......	......	......	......	1,200
Cowlitz	......	......	......	......	100	......	800	250	250	400	600	10,000	100	......	......	......
Garfield	......	......	......	......	......	......	400	250	......	250	......	......	......	......	......	......
Grays Harbor	3,150	1,890	2,200	......	300	150	5,000	2,500	6,500	7,000	1,750	300,000	......	......	......	200
King	15,635	4,706	52,479	10,392	5,869	7,477	218,766	38,131	140,005	130,325	60,826	19,500	83,313	112,682	25,013	......
Klickitat	......	......	......	......	......	......	1,200	700	......	1,500	......	......	......	......	......	200
Lewis	100	150	1,260	250	435	561	8,000	2,500	5,200	5,950	1,400	480,000	600	5,500	......	......
Pacific	630	135	508	130	118	85	3,229	510	1,775	2,122	508	60,000	1,218	1,624	......	......
Pierce	2,520	630	4,000	2,000	2,000	4,800	70,000	9,500	49,200	46,550	15,060	1,264 000	15,120	8,800	......	15,000
Skamania	......	......	......	......	......	......	200	75	......	150	15	......	......	......	......	20
Spokane	1,260	......	1,000	1,000	208	3,400	67,000	22,000	2,600	55,300	9,450	870,000	28,980	25,300	7,000	33,600
Thurston	30	......	600	......	......	......	700	150	140	......	......	......	200	......	100	......
Wahkiakum	500	100	......	150	50	75	125	50	125	100	200	12,600	1,050	400	......	50
Walla Walla	......	......	2,520	......	......	......	5,000	2,500	1,300	1,750	......	......	1,260	......	......	1,860
Yakima	......	......	......	......	......	......	6,000	1,500	......	6,000	350	......	160	......	......	......
Totals	24,325	7,611	64,567	14,022	9,080	16,598	388,170	81,366	207,896	258,747	90,549	3,031,100	133,251	154,606	32,113	54,530

NOTE: The following fruits were imported into King county during the year ending January 1, 1915: Quinces, 405; pineapple, 964; pomegranates, 413; casabas, 2,340; tangerines, 140; Mexican limes, 138; persimmons, 397; Japanese pears, 371; Japanese oranges, 38,671.

IMPORTS, FRUIT GROWN OUTSIDE OF STATE, YEAR 1915.

(Figures indicate number of standard size packages.)

COUNTIES	Apples	Pears	Peaches	Oranges	Bananas	Lemons	Grapes	Plums and Prunes	Apri-cots	Cher-ries	Water-melons (pounds)	Toma-toes	Canta-loupes	Straw-berries	Other Berries and Or'nberries	Other Fruit
King	6,502	3,668	22,700	172,626	101,075	41,830	78,373	10,568	2,961	5,617	4,380,000	72,304	47,985	49,044	2,492	53,725
Thurston	600												1,100		40 bbl.	
Franklin				1,000	700	700										
Benton				1,560	1,000	1,050										
Lewis	630		1,000	5,000	5,250	1,500	6,500	300	635	601	360,000	5,500	1,750	630		
Pacific	250	100	100	2,500	2,000	506	1,200	200	201	70	30,000	1,300	400	500	150	100
Grays Harb'r.	12,050	3,780	9,000	4,201	7,800	2,122	7,800	1,000	1,590	650	36,000	5,500	2,100	630	100	
Skamania			500	490	520	370					20,000		150			
Wahkiakum	2,000	350	1,200	225	110	50	400		75		5,000	400	75	600	150	
Klickitat				2,000	1,750	1,200		14,000 lbs dried					500			
Clarke	1,000			1,000	600	720	500				70,000		335	800		100
Spokane			2,000	81,500	56,700	32,500	26,000				1,890,000	8,800	16,800	4,410	2,000	
Pierce	1,273	255	2,568	51,739	35,300	10,141	22,705		542	295	5,508	3,127	13,280	4,625	10,028	12,332
Cowlitz	300			700	450	300	375		1,000		50,000	1,000	350	400	75	60
Garfield				500	350											
Walla Walla				5,500	8,400	4,000					450,000		1,440	630		
Columbia				500	350								350			
Yakima				4,750	3,888	2,800	150				24,000	250	850	1,200	250 lbs.	
Whatcom	649	1,264	6,346	17,364	9,267	2,130	10,074	1,278	521	826	181,796	10,134	4,375	7,334	425	
Snohomish				6,800	14,440	1,700	10,900	1,000			120,000	1,000	1,700	2,300		530

IMPORTATION OF VEGETABLES INTO WASHINGTON.

FROM ALL POINTS OUTSIDE OF STATE DURING YEAR 1914.

(The figures below give the number of standard size packages.)

COUNTIES	Potatoes	Onions	Cabbage	Lettuce	Cauliflower	Mixed Vegetables	Sweet Potatoes	Celery	Asparagus	Rhubarb	Cucumbers	Turnips	Egg Plant	Carrots	Corn
Asotin	....	....	....	....	....	4,200	....	....	....	....	....	....	....	....	....
Clarke	....	....	....	....	....	....	....	....	....	....	....	....	....	....	300
Columbia	500	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cowlitz	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Grays Harbor	7,250	1,750	2,000	....	....	....	....	300	....	....	156	....	....	....	....
King	50,551	48,911	22,629	31,320	9,210	20,273	24,011	10,196	16,604	1,955	706	1,532	2,570	1,491	246
Klickitat	....	2,000	1,800	....	....	....	....	250	....	....	500	....	....	....	....
Lewis	2,250	1,750	600	609	....	....	4,000	300	....	51	200	....	....	....	....
Pacific	500	1,074	200	99	300	....	....	100	....	....	....	....	32	50	....
Pierce	6,750	10,250	6,000	....	....	56,400	....	5,100	....	290	189	....	....	....	3,000
Skamania	....	....	....	....	....	....	....	....	....	....	....	....	....	....	10
Spokane	8,000	8,000	1,000	....	....	43,200	12,300	1,200	....	....	135	....	....	250	....
Thurston	....	500	....	....	....	....	....	....	300	....	....	....	....	....	....
Wahkiakum	1,000	2,000	500	....	....	50	....	50	....	125	100	....	50	....	50
Walla Walla	7,000	....	2,000	....	....	1,800	....	....	....	....	....	....	....	....	....
Yakima	....	....	600	....	....	....	....	300	....	....	....	....	....	....	....
Totals	83,821	76,235	37,329	32,028	9,510	125,923	40,311	17,796	16,904	2,421	1,986	1,532	2,652	1,791	3,606

NOTE: Additional vegetables were imported into King county from points outside of the state as follows: Peppers, 13,600; peas, 2,072; beets, 80; beans, 503; Brussels sprouts, 352; squash, 850; parsnips, 125; garlic, 488; artichokes, 882.

IMPORTS, VEGETABLES GROWN OUTSIDE WASHINGTON, YEAR 1915.

(The figures below give the number of standard size packages.)

COUNTIES	Potatoes	Onions	Egg Plant	Cabbage	Cucumbers	Celery	Rhubarb	Carrots	Green Corn	Other Vegetables	Sweet Potatoes	Lettuce	Cauliflower	Green Beans	Peppers
King	99,898	45,764		20,580		10,481	1,919	1,896		122,968					
Thurston		900													
Lewis	1,500	2,400	20	600	133	300	27				1,500	800			
Pacific	300	100	18	122	33	90	6	50		700					
Grays Harbor	8,100	2,100	105	2,400	367	250					156		75	90	95
Skamania		100		75					40						
Wahkiakum	1,000	400							68						
Klickitat	2,000	2,780	300			63			80						
Clarke	2,600	400	60	40					80						
Spokane	15,600	7,500		6,000		3,600					16,500				
Pierce	23,722	10,799		4,043	277	2,382	275		40	25,936					
Cowlitz	750	1,000		5,000						7,500					
Walla Walla	28,500	12,000													
Yakima	1,400	950		740	175	960	100								
Whatcom	5,227	8,096	210	1,905	600	600	312	150							
Snohomish		1,800		300		255	12								

TOTAL AMOUNT IN POUNDS OF FRUITS AND VEGETABLES USED IN BY-PRODUCTS.—SEASON 1914.

COUNTIES	Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Beans	Squash	Grapes	Raspberries
Asotin		155,200	84,000		6,960	92,400				
Benton	42,000								660,000	
Clarke		310,782		9,473		144,129			14,821	
Island	207,600			16,200		6,000	2,400			27,000
King	654,994	766	302		3,945	18,380			4,129	135,542
Klickitat	134,400	43,400	108,400	64,140	152,400	84,940	25,680			
Pierce	623,495	198,854	20,000	114,765		206,071	1,985	37,704		3,300,071
San Juan	420,000	102,000		30,000		18,840				36,000
Skagit	25,000									
Skamania										
Snohomish		24,600		40,200		4,200				229,800
Spokane	7,144,000					3,000	3,000			
Thurston	975,000	450,000	228,000	492,000		402,000	36,000	30,000		174,000
Walla Walla	100,000									
Whatcom	758,580	276,260		596,760		317,460	409,880			1,043,731
Yakima	2,817,511	600,000	150,000							
Totals	14,202,580	2,161,862	585,702	1,368,538	163,305	1,297,420	478,445	67,704	678,950	4,946,144

Total Amount in Pounds of Fruits and Vegetables Used in By-Products.—Season 1914.—Continued.

COUNTIES	Black-berries	Straw-berries	Other Berries	Cucumbers	Cabbage	Dried Prunes	Beets	Cauli-flower	Rhubarb	Toma-toes
Asotin	....	....	....	....	....	....	....	....	....	38,700
Benton	....	....	....	....	....	....	....	....	....	....
Clarke	2,097	74,050	22,815	....	....	2,000,000	....	....	....	....
Island	56,400	16,800	54,000	....	....	....	41,400	....	....	....
King	118,109	310,816	132,078	1,450,000	1,680,000	....	....	20,000	93,000	....
Klickitat	3,892	47,340	35,944	....	....	....	....	....	....	26,460
Pierce	2,814,354	466,735	248,280	....	55,182	....	....	679	190,500	....
San Juan	....	....	....	....	....	12,000	....	....	....	....
Skagit	....	....	....	....	....	....	....	....	....	....
Skamania	....	....	....	....	....	100,000	....	....	....	....
Snohomish	24,000	....	....	....	....	....	....	....	....	....
Spokane	....	....	....	350,000	310,000	....	8,280	11,000	....	....
Thurston	132,000	330,000	456,000	....	27,000	....	....	....	....	....
Walla Walla	....	....	....	240,000	....	....	....	....	....	....
Whatcom	266,300	220,933	30,900	1,500	400	....	....	....	19,560	....
Yakima	....	....	....	....	....	....	....	....	....	2,600,000
Totals	3,417,152	1,466,674	979,517	2,041,500	2,072,582	2,112,000	49,680	31,679	303,060	2,665,220

FRUITS AND VEGETABLES USED IN BY-PRODUCTS, YEAR 1915.

(These figures show the number of pounds of the fresh product used.)

COUNTIES	Apples	Pears	Peaches	Cher-ries	Grapes	Apri-cots	Straw-berries	Black-berries	Rasp-berries	Other Berries	Beans	Squash	Cucum-bers	Cab-bage	Quince	Prunes	Toma-toes
King	548,169	392	....	12,509	6,102	1,835	34,696	21,892	100,503	201,567	....	....	1,300,000	1,600,000	2,154	6,119	....
Thurston	220,500	283,500	....	270,000	....	....	44,000	66,000	55,000	250,000	60,000	30,000	....	70,000	....	....	....
Franklin	....	....	5,000	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Benton	....	....	4,000	....	24,000	....	....	....	....	....	....	....	....	....	....	....	....
Skamania	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Klickitat	....	....	....	....	....	250,000	....	....	....	....	....	....	....	....	....	500,000 pounds	....
Clarke	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	15,750,000 pounds	....
Spokane	3,200,000	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Pierce	349,620	292,715	....	244,729	....	....	197,237	3,176,282	2,083,820	1,223,741	9,291	188,426	220,000	640,242	....	....	....
Walla Walla	950,000	....	....	....	....	....	....	....	....	....	....	....	60,000	20,000	....	....	....
Asotin	....	....	67,000	105,000	....	....	....	....	....	....	....	....	....	....	....	....	117,000
Yakima	3,186,000	....	24,000	....	....	....	....	....	....	....	....	....	....	....	....	....	3,600,000
Whatcom	270,000	15,000	185,290	....	....	....	11,000	35,830	104,740	54,196	147,964	....	....	....	....	50,000 pounds	....

COUNTIES RECEIVING WASHINGTON-GROWN FRUIT—1914.

(The figures below give the number of standard size packages.)

COUNTIES	Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Grapes	Canta-loupes	Water-melons (pounds)	Toma-toes	Berries	Mixed Fruit
Clarke	500		5,000		225		800	250	5,000	200	1,250	
Cowlitz			3,000								100	
Garfield	680										680	
Grays Harbor	22,680	11,970	48,400	1,000	1,500	1,100	1,800				6,980	
King	447,686	48,668	215,814	16,662	24,917	54,339	65,686	73,445	7,692	40,154	173,237	
Lewis	7,560	1,260	25,200	800	978	408	2,600	1,050	90,000	8,800	2,100	
Pacific	4,410	510	5,847	366	250	712	804	554	60,000	1,180	1,630	
Pierce	106,470	22,050	99,000	3,000	5,000	7,200	15,800	13,650	960,000	2,200	46,620	1,800
Skamania			100					15	2,000			
Spokane	88,830	5,670	8,000	9,000	885	2,600	41,600	64,750	960,000	26,400	31,500	6,000
Wahkiakum	500	100	200		50	75				100	1,050	
Totals	679,216	90,223	410,561	30,828	83,305	66,429	128,040	153,714	2,084,692	73,484	265,047	7,800

COUNTIES RECEIVING WASHINGTON GROWN FRUIT, YEAR 1915.

(The figures below give the number of standard size packages.)

COUNTIES	Apples	Pears	Peaches	Grapes	Plums and Prunes	Apricots	Cherries	Water-melons (pounds)	Toma-toes	Canta-loupes	Straw-berries	Other Berries	Mixed Fruit	Cran-berries
Spokane	55,400	6,300	120,000	40,300	3,000	5,000	9,600	950,000	31,900	17,851	20,160	7,200		
Cowlitz	500		2,000								400	50		
Clarke			2,000			2,700								
Wahkiakum	2,000		800		10,000									
Skamania					2,000	150								
Pierce	66,008	11,863	127,702	20,012	4,139	10,698	12,257	230,048	8,179	14,590	6,796	11,756	888	
Grays Harbor	25,830	10,080	39,000	1,300	1,000	1,367	1,497		1,100		1,260	540		69 bbl.
Pacific	3,150	500	7,750	400	100	200	700	90,000	1,400	600	1,000	200	400	
Lewis	5,670	.630	15,000	2,600	700	897	350	120,000	4,400	1,050	2,520			
King	384,063	21,341	213,138	24,591	16,264	28,194	40,008	637,500	45,308	48,562	99,126	35,371	146,348	
Columbia									1,100					
Walla Walla			1,000			250							1,200	
Garfield	3,780	630	3,000					30,000			1,260		600	
Yakima												350		
Whatcom	19,541	3,992	78,013	8,004	6,772	10,097	10,712	77,691	13,925	3,928	20,010	3,012		
Snohomish	15,500	4,000	3,300	6,500	2,800	7,500	4,500	70,000	4,500	2,400	7,500	1,550	530	

COUNTIES RECEIVING WASHINGTON-GROWN VEGETABLES—1914

(The figures below give the number of standard size packages.)

COUNTIES	Potatoes	Onions	Cabbage	Lettuce	Cauliflower	Mixed Vegetables	Celery	Asparagus	Rhubarb	Cucumbers	Turnips	Egg Plant	Carrots	Corn
Clarke	500	100												
Garfield						2,400								
Grays Harbor	9,750	1,000					400		630	167		90	600	250
King	524,422	17,384	7,398	9,762	148	19,687	3,035	15,377	12,115	11,307	2,942	2,874	1,975	3,011
Lewis	4,250	1,000	1,400	3,400		1,200	600	630	215	80	1,200	85	500	567
Pacific	8,500	93	600	380	112	250	115		401	30	250		250	313
Pierce	83,250	5,500	1,000			9,000				150		2,000		1,450
Spokane	10,000	5,000	5,000			7,800	1,500		600	264		500	250	1,250
Wahkiakum							50			100				
Totals	640,672	30,077	15,398	13,542	260	40,337	5,700	16,007	13,961	12,098	4,392	5,499	3,575	6,841

NOTE: Additional vegetables, as follows, were shipped into King county from other counties in the state, during this year: Rutabagas, 387; squash, 1,024; parsnips, 264; peppers, 3,814; spinach, 4, 161; beets, 900.

COUNTIES RECEIVING WASHINGTON GROWN VEGETABLES, YEAR 1915.

(The figures below give the number of standard size packages.)

COUNTIES	Potatoes	Onions	Egg Plant	Cabbage	Cucumbers	Celery	Rhubarb	Carrots	Green Corn	Other Vegetables
Spokane	15,000	4,500		1,200						
Cowlitz	750									
Pierce	117,675	9,976	1,383		85		147			7,588
Grays Harbor	15,500	1,000			868	569	600	150	299	
Pacific	9,000	950		500	818	850	204	150	200	240
Lewis	3,750	1,250		1,000	1,200	800			700	2,600
King	477,244	36,159		2,014	7,844		11,362	5,288		68,160
Columbia	1,000	750		400						1,200
Walla Walla				8,600		600				
Garfield	500	250		400						600
Whatcom	16,698	1,884	528	1,962	1,850	1,922	881	1,425	1,725	400
Snohomish	24,200	1,700	100	600	825	525	360	1,060	850	110

NURSERY STOCK PRODUCTION—SEASON 1914.

COUNTIES	Apples	Pears	Peaches	Plume and Prunes	Apricots	Cherries	Nuts	Grape Vines	Trees	Shrubs
Asotin	50,000	10,000	3,000	2,000	1,000					500
Benton	434,000	30,000	13,200	10,000		4,400				15,800
Chelan	105,000	1,790	5,000							1,000
Clarke	500		250	75,000			200			
Cowlitz	6,000	142,000	500	5,500						2,000
Douglas	20,000			500	500					
Grant	650,000	90,000	2,000	3,000	3,800	18,000	3,500		85,000	20,000
King	30,500	35,000	1,000	9,000		20,000				19,300
Klickitat	10,000									
Mason								100,000		
Okanogan	75,000									
Pierce										44,788
Skagit	1,000	300		500		1,500				1,500
Spokane	224,000	10,400	10,100	1,550	100	1,325	1,012		95,500	125,250
Walla Walla										3,600
Yakima	648,696	172,956	171,854	68,971	32,267	43,533	13,655			160,105
Totals	2,254,696	492,446	206,904	176,821	71,867	88,758	18,367	100,000	180,500	393,843

NOTE: In addition to the above King county produced 16,000 berries and Yakima county produced 5,000,000 seedlings.

NURSERY STOCK PRODUCTION, YEAR 1915.

COUNTIES	Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Nuts	Grapes	Shrubs and Trees	
									Deciduous	Evergreen
Spokane	5,000					200			21,500	5,500
Clarke	800			50,500						
Klickitat	10,000	1,000	800		250	150				
Mason								200,000		
Lewis									580	
King	53,000	43,500	2,200	12,000	250	23,000	500		12,850	21,600
Walla Walla									5,200	
Asotin	8,000	1,000	2,000	300	300	500				
Yakima	170,000	78,000	94,840	192,000		134,300			196,075	218,600

IMPORTATIONS OF FOREIGN NURSERY STOCK.

FOR PERIOD JUNE 15, 1914, TO JULY 1, 1915.

FROM	TO	Ornamental Deciduous Trees and Shrubs	Coniferous Trees	Evergreens	Field Grown Florist Stock	Fruit Trees and Fruit Tree Stock	All Other Plants	No. of Cases
Scotland	Bellingham			100				1
Sweden	Cape Horn						50	1
Belgium	Everett	104		105			95	3
Ireland	Lynden	48						1
France	Mt. Vernon	2,250		990		2,000		2
Holland	Pt. Townsend.	280	12	45	50			2
Belgium	Pt. Townsend.	30		25				1
France	Prosser	2,925		75				1
Belgium	Snohomish	50						1
Canada	Spokane	135						1
France	Spokane	4,500	200	1,700				1
Belgium	Spokane	385		55			181	7
Holland	Spokane	1,814		10				3
Holland	Seattle	17,673		3,144		30		129
Canada	Seattle	7					2,160	23
Ireland	Seattle	63					500	1
England	Seattle	765		3	24		94	7
Belgium	Seattle	808		151			886	34
Japan	Seattle	2,732	86	817	1,169			43
France	Seattle	200		5,564		15,660		5
Ireland	Tacoma	8						1
Belgium	Tacoma	300					117	9
Japan	Tacoma	232		260	191			9
Holland	Toppenish					4,200		1
Belgium	Walla Walla	102						1
France	Wenatchee	1,849				43,000		3
France	Wapato	64,100		101,075		193,960	15,265	108
Totals		100,860	298	114,119	1,434	258,840	19,408	394

Total imported plants, 494,969.

NURSERY STOCK FROM FOREIGN COUNTRIES.

JULY 1, 1915, TO JULY 1, 1916.

FROM	TO	Ornamental Deciduous Trees and Shrubs	Coniferous Trees	Evergreens	Field Grown Florist Stock	Fruit Trees and Fruit Tree Stock	All Other Plants	No. of Cases
Belgium	Seattle	535		772				21
Holland	Seattle	14,013		4,817	700		200	123
Holland	Seattle							*41
British Columbia	Seattle			100			636	20
England	Seattle	8		70		250		3
England	Thomas	5,000						1
Japan	Seattle	6,975		96	157		132	24
Ireland	Seattle	130						1
France	Seattle	5,560		3,762				8
Japan	Christopher	70			430			5
Belgium	Thomas	190						4
Belgium	Pt. Townsend.	55						1
Japan	Kirkland				125			2
Japan	Port Angeles	1,000						5
Holland	Walla Walla	104						1
England	Walla Walla	300						1
Ireland	Mt. Vernon	153						1
Holland	Mt. Vernon	1,440						2
Belgium	Snohomish	150						2
Holland	Snohomish	1,245		110				5
Holland	Everett	4,088		29				8
Ireland	Everett	11						1
Holland	Tacoma	1,580		91				10
Belgium	Tacoma	140						2
Holland	Puyallup	285						1
Belgium	No. Yakima	25						1
France	Wapato	182,550	4,420	1,100	11,000	7,000	500	34
France	Wapato							†6
Belgium	Spokane	465						8
England	Spokane	818						1
Japan	Spokane	311						8

* No. invoice. † 374 pounds pear and 85 quarts cherry seeds.

ORCHARD PLANTINGS FOR FALL 1914.

AS SHOWN BY COMPILATION OF POST CARD NOTICES.

D—Nursery stock grown within Washington. F—Grown outside of the state.

COUNTIES		Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Quinces	Nuts	Grape Vines	Raspberries	Blackberries	Strawberries	Miscellaneous Berries	Miscellaneous Roots	Ornamental Trees	Ornamental Shrubs
Adams	D	70	26	18	19	16	61	....	....	76	24	29	100	6	....	91	163
	F	7	4	3	2	....	2	1	....	3	....	....	....	4	10	34	20
Asotin	D	21	3	14	1	2	9	....	26	6	6	10	....	14	....	2	31
	F	5	....	14	....	3	1	....	12	2	6	....	....	....	....	6	3
Benton	D	36	9	19	12	8	46	2	1	260	514	204	....	1,146	3	....	146
	F	100	561	....	5,500	9	210	....	....	25	....	....	....	110	....	6	12
Chehalis	D	243	58	11	100	1	72	10	183	....	147	1,163	400	183	185	60	444
	F	369	61	19	107	....	99	7	8	27	208	177	400	75	122	191	1,278
Chelan	D	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	172	1,295	92	1,080	85	156	10	20	4	....	2	....	....	100	7	48
Clallam	D	236	54	10	72	4	58	2	6	8	14	72	200	208	54	29	129
	F	26	2	....	8	....	12	2	....	1	....	....	....	....	....	....	2
Clarke	D	71	21	39	49	4	47	1	21	12	....	4	24	13	....	6	16
	F	792	365	364	3,742	47	267	12	447	160	77	118	200	46	58	53	391
Columbia	D	64	8	24	9	18	81	2	4	55	42	38	300	55	1,000	41	222
	F	851	136	1,031	11	11	189	2	14	185	74	40	850	16	544	75	69
Cowlitz	D	164	18	53	36	26	62	4	46	46	....	8	....	89	....	5	12
	F	266	37	37	38	28	65	20	56	18	64	31	5,250	104	61	5	62
Douglas	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	12	....
	F	122	13	5	21	2	33	....	8	2	10	2	475	4	59	57	11
Ferry	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	6	....	....	3	....	....	....	4	2	10	....	150	4	44	2	5
Franklin	D	23	12	17	12	3	17	1	....	18	6	8	....	....	....	6	24
	F	18	9	8	6	10	19	1	60	6	....	....	....	....	....	794	145
Garfield	D	31	2	9	12	5	38	....	10	37	24	16	100	....	....	15	55
	F	4	6	6	1	....	6	....	....	12	6	14	50	....	....	50	....
Grant	D	239	38	54	67	30	89	....	....	31	12	4	....	18	6	78	92
	F	148	10	12	14	5	23	....	12	30	23	18	250	14	88	244	43
Island	D	289	61	16	99	7	92	10	4	18	18	30	328	62	....	8	18
	F	212	50	10	62	....	96	....	134	28	305	102	1,150	80	....	20	164
Jefferson	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	8	2	3	3	....	14	....	....	....	....	....	....	....	....	5	....
King	D	2,519	1,042	136	527	21	1,089	149	97	101	489	508	1,529	1,426	489	357	2,568
	F	481	221	98	256	83	990	38	136	61	251	58	7,479	558	13,684	950	1,788
Kitsap	D	581	256	61	171	27	883	41	28	65	168	109	8,868	201	25	83	757
	F	209	118	21	55	4	241	3	60	12	6	22	200	....	....	12	87

Kittitas	D	167	161	45	87	18	134	....	7	21	227	18	88	81	4	81	562
	F	2,052	74	1	4	8	14	....	1	1	....	....	70	1	4	7	40
Klickitat	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	221	1	10	17	8	11	....	62	1,204	260	....	106	6	135	56	28
Lewis	D	1,025	278	301	388	11	880	48	33	75	278	1,113	7,480	418	50	47	420
	F	1,307	365	58	497	5	543	24	328	65	407	412	1,050	454	217	470	627
Lincoln	D	870	92	83	66	69	148	1	8	77	92	13	6	178	12	450	522
	F	682	106	42	166	84	208	2	20	6	85	624	511	78	44	150	77
Mason	D	297	70	28	85	....	109	11	15	15	6	29	108	22	18	11	102
	F	34	6	3	11	2	6	2	8	....	....	....	....	....	....	....	....
Okanogan	D	8,106	2	6	2	....	7	1	....	4	50	....	....	....	....	....	....
	F	....	....	....	....	....	....	....	....	62	....	....	....	....	....	16	18
Pacific	D	218	97	4	72	4	90	1	5	18	55	51	875	211	136	49	227
	F	193	54	1	39	....	41	....	11	3	40	115	150	54	50	37	83
Pend Oreille	D	1,595	184	61	253	54	303	88	16	34	481	434	7,538	427	84	60	121
	F	66	4	58	28	....	2	....	4	2	10	....	150	4	44	22	5
Pierce	D	1,620	793	84	493	6	700	36	87	35	358	245	2,084	583	....	106	5,450
	F	1,056	260	93	316	8	621	13	189	156	77	95	1,014	215	932	324	1,768
Skagit	D	692	223	49	209	17	531	29	20	30	523	131	3,237	414	539	65	690
	F	570	202	56	181	13	343	6	82	82	179	58	675	109	....	97	662
Skamania	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	59	65	2	18	2	10	2	....	....	....	12	....	....	....	4	12
Snohomish	D	1,291	500	98	436	24	462	39	51	219	154	146	5,957	773	468	213	1,021
	F	1,806	385	154	506	16	950	50	402	115	296	376	5,550	251	123	660	2,424
Spokane	D	654	119	93	163	21	164	11	1	59	94	42	2,100	1,448	58	181	149
	F	1,570	120	172	113	39	218	5	20	121	74	69	625	19	265	300	1,795
Stevens	D	255	84	18	68	8	108	4	8	10	83	30	300	55	....	14	39
	F	12	4	8	3	....	25	....	10	2	10	....	275	4	44	2	9
Thurston	D	460	807	24	175	4	843	11	4	42	57	217	1,275	131	2	347	104
	F	1,161	208	29	108	1	489	....	27	233	46	59	500	201	50	31	388
Wahkiakum	D	27	11	....	3	7	19	2	....	....	55	61	275	20	....	....	12
	F	....	....	....	....	....	12	....	....	....	....	....	....	....	2	1	....
Walla Walla	D	82	10	25	14	2	90	....	4	18	....	3	....	....	28	1	7
	F	2,978	8	130	60	14	110	2	23	104	143	35	500	36	....	70	784
Whatcom	D	592	492	47	124	10	488	24	40	29	172	243	50	69	8	88	325
	F	681	221	85	185	8	559	14	112	30	241	66	3,708	278	132	260	874
Whitman	D	107	19	9	14	10	73	2	1	32	96	297	200	32	....	104	235
	F	629	112	269	174	90	388	5	10	229	858	455	5,524	777	....	600	1,134
Yakima	D	12	4	....	....	....	13	2	....	....	3	3	....	....	....	122	64
	F	35	51	34	69	120	54	1	1,742	8	16	81	350	4	74	479	253
San Juan	D	80	16	2	33	7	71	2	2	7	72	100	818	115	10	11	79
	F	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Totals.........		41,048	10,706	4,376	17,271	1,084	18,749	751	4,695	4,859	7,992	8,400	76,377	11,854	20,055	8,810	29,905

ORCHARD PLANTINGS FOR SPRING, 1915.

AS SHOWN BY COMPILATION OF POST CARD NOTICES.

D—Nursery stock grown within Washington. F—Grown outside of the state.

COUNTIES		Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Quinces	Nuts	Grape Vines	Raspberries	Blackberries	Strawberries	Miscellaneous Berries	Miscellaneous Roots	Ornamental Trees	Ornamental Shrubs
Adams	D	80	28	8	40	26	53	3	21	18	2	20	1,102	29	54	1,424	375
	F	141	31	8	38	10	33	3	2	25	26	18	508	12	241	150	106
Asotin	D	4	2	4	2	....	3	....	17	6	....	....	1,900	....	....	....	10
	F	104	24	41	22	11	106	2	255	49	145	20	....	....	....	49	108
Benton	D	874	218	39	86	32	137	6	97	268	103	2	5,826	86	335	1,598	3,506
	F	120	273	185	276	55	1,965	9	176	2,981	....	....	....	240	1	24	91
Chehalis	D	309	150	29	98	12	123	5	42	40	416	110	774	116	1,009	301	671
	F	324	131	4	108	....	88	5	16	64	69	55	1,962	158	202	185	740
Chelan	D	8,939	1,005	107	358	438	241	....	21	1,347	22	22	8,700	18	22	102	1,004
	F	9,131	1,049	125	597	346	277	23	138	444	127	191	10,200	232	220	307	1,627
Clallam	D	41	476	....	10	....	4	....	12	2	2	....	675	82	83	102	5
	F	133	17	8	40	5	33	5	4	20	49	32	314	91	220	114	51
Clarke	D	119	18	21	65	1	37	....	29	231	24	....	635	59	22	86	40
	F	530	140	147	404	22	155	4	73	104	210	134	4,450	1,854	442	830	423
Columbia	D	37	8	17	9	3	23	6	....	11	6	2	3,000	8	8	7	110
	F	107	11	89	136	....	37	....	10	270	46	2	200	6	110	90	146
Cowlitz	D	94	59	12	29	....	56	....	8	12	....	....	650	62	6	281	4
	F	36	15	22	12	1	14	1	36	12	....	10	500	....	85	22	118
Douglas	D	923	126	88	23	8	36	7	15	81	22	26	2,547	75	16	100	179
	F	171	24	8	33	8	56	....	10	6	48	4	150	....	....	41	36
Ferry	D	2	8	4	4	....	3	....	....	....	....	....	4,625	....	....	2	16
	F	536	70	....	93	....	177	....	3	24	169	86	3,425	6	110	202	260
Franklin	D	55	4	13	26	14	38	5	22	118	....	2	70	154	30	281	43
	F	18	7	40	8	1	8	....	20	78	16	14	1,100	....	12	84	47
Garfield	D	16	....	10	2	1	23	....	3	7	....	....	1,400	....	1	39	11
	F	14	....	....	....	....	2	....	2	....	....	....	....	3	....	12	13
Grant	D	808	171	156	111	74	136	1	220	....	....	....	....	....	....	....	....
	F	178	14	16	40	102	26	4	20	....	....	....	7,886	68	74	160	58
Island	D	491	118	19	95	4	86	10	7	186	182	157	1,930	40	110	504	72
	F	118	9	....	23	....	123	....	14	46	84	8	2,625	1,757	15	19	53
Jefferson	D	48	7	....	6	....	25	....	....	25	182	24	600	....	....	24	180
	F	....	....	....	....	....	....	....	....	3	38	110	1,225	35	2	105	50
King	D	7,724	1,376	261	1,490	68	3,119	84	220	....	14	2	52,497	5,162	13,887	6,070	38,331
	F	6,409	699	161	1,081	54	2,255	52	180	....	....	....	58,357	4,882	2,766	8,900	47,621
Kitsap	D	400	74	12	50	5	100	....	1	442	3,688	4,108	1,775	24	57	97	170
	F	109	15	14	49	....	156	4	11	844	3,790	8,992	800	6	115	54	34

Kittitas	D	590	366	39	175	9	238	2	21	28	....	22	5,490	101	121	70	1,271
	F	13	81	3	1	4	11	....	....	9	10	8	100	42	105	6	22
Klickitat	D	246	29	18	29	7	52	....	....	30	78	97	1,800	24	43	18	26
	F	1,606	128	46	51	63	118	7	282	....	10	....	1,000	17	16	2	105
Lewis	D	435	1,117	39	84	....	149	9	38	130	70	12	8,127	39	1,071	83	720
	F	449	92	74	99	2	143	2	43	362	88	11	4,512	21	81	93	556
Lincoln	D	565	99	63	45	41	154	11	7	45	42	....	7,025	46	47	734	876
	F	302	182	136	113	63	145	....	7	27	83	97	1,700	6	110	178	274
Mason	D	123	1	1	2	1	5	1	4	400	10	8	2,800	16	4	9	....
	F	49	8	3	15	....	8	....	4	129	109	2	206	6	110	58	22
Okanogan	D	1,006	102	58	70	379	67	8	76	25	24	....	8,625	58	88	412	131
	F	1,983	407	444	220	119	356	29	42	6	11	4	6,524	6	110	293	274
Pacific	D	111	29	1	25	2	28	....	....	202	58	75	3,825	44	39	59	571
	F	163	32	....	39	....	39	1	11	304	88	140	7,400	38	12	28	311
Pend Oreille	D	96	58	11	33	6	62	4	....	....	120	20	512	169	63	29	85
	F	87	7	....	32	....	11	....	....	8	50	173	300	12	220	114	64
Pierce	D	1,004	2,033	65	257	33	1,386	12	79	....	60	24	20,909	1,484	11,764	1,295	579
	F	654	314	33	158	9	1,492	22	106	....	145	79	2,874	339	688	606	3,790
San Juan	D	37	291	9	11	6	188	11	....	115	1,273	911	500	60	3	23	....
	F	6	16	16	33	....	24	1	3	112	65	332	100	....	....	....	30
Skagit	D	315	96	12	135	4	160	20	8	....	14	13	10,712	180	504	92	76
	F	133	29	32	38	....	45	2	32	....	25	18	1,262	14	12	28	2,344
Skamania	D	....	....	....	....	....	....	....	....	52	108	48	400	15	114	62	139
	F	282	302	39	27	3	55	2	7	20	45	106	....	....	....	....	....
Snohomish	D	1,306	1,621	42	268	16	559	13	10	....	....	....	7,500	1,519	999	456	970
	F	440	94	16	133	8	157	3	42	42	44	506	1,666	92	532	247	707
Spokane	D	581	135	182	91	30	172	22	46	79	264	140	43,477	168	1,113	530	1,308
	F	5,725	1,064	316	2,269	115	1,217	26	367	23	38	49	47,414	42	1,064	1,595	6,506
Stevens	D	778	165	290	164	69	209	16	14	123	110	28	2,324	87	28	48	809
	F	1,846	567	333	446	78	661	5	26	642	512	296	6,674	40	451	562	914
Thurston	D	167	910	24	27	24	66	2	7	119	71	125	5,525	64	24	38	16
	F	437	233	14	44	12	848	2,501	77	164	320	187	850	24	89	33	157
Wahkiakum	D	4	2	....	1	....	1	....	....	61	40	....	200	....	3	....	....
	F	....	....	....	....	....	....	....	....	189	15	111	....	....	....	....	....
Walla Walla	D	100	22	56	69	10	64	6	15	83	9	21	2,978	97	84	36	225
	F	11,000	5,091	229	844	60	365	....	150	426	139	122	390	131	1,359	269	485
Whatcom	D	1,583	886	101	898	16	945	20	28	98	142	86	6,606	855	948	557	350
	F	272	85	56	93	1	464	3	59	29	55	22	1,304	22	336	190	522
Whitman	D	369	40	74	44	64	157	2	9	92	148	5	11,685	27	97	13,148	4,133
	F	627	128	167	129	73	240	2	24	99	216	72	12,042	19	284	13,547	4,756
Yakima	D	21,524	8,092	2,593	2,522	131	821	15	1,684	964	1,601	147	690	20	344	323	1,396
	F	4,415	345	59	91	7	163	10	997	489	54	100	21,750	448	968	914	1,841
Totals.....	D	51,894	19,897	4,423	6,926	1,534	9,675	288	2,797	5,432	7,850	6,257	264,101	13,171	33,579	29,975	58,573
	F	48,615	11,634	2,833	7,835	1,232	11,573	2,728	3,188	7,550	6,884	7,016	172,284	8,431	10,673	29,271	75,037

ORCHARD PLANTINGS FOR FALL 1915.

AS SHOWN BY COMPILATION OF POST CARD NOTICES.

D—Nursery stock grown within Washington. F—Grown outside of the state.

COUNTIES		Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Quinces	Nuts	Grape Vines	Raspberries	Blackberries	Strawberries	Miscellaneous Berries	Miscellaneous Roots	Ornamental Trees	Ornamental Shrubs
Adams	D	191	68	19	93	45	137	2	18	83	6	18	400	51	358	612	769
	F	65	24	5	30	8	33	....	....	4	20	22	1,877	28	140	70	81
Asotin	D	1	....	15	2	2	22	....	80	8	2	6	....	....	....	4	3
	F	99	21	130	33	20	86	3	185	59	160	99	6,050	14	....	105	181
Benton	D	1,000	300	25	257	606	555	....	133	3,000	52	19	200	19	20,001	1,116	970
	F	60	....	....	....	50	75	....	29	12	124	17	3,225	1,221	....	7	42
Chelan	D	16,061	5,805	392	1,813	565	1,570	16	58	332	304	155	542	14	....	356	1,662
	F	316	14	24	34	9	48	5	60	24	20	28	10,085	40	237	247	596
Clallam	D	273	81	88	103	50	188	9	9	13	64	99	931	143	654	181	547
	F	71	15	3	16	6	34	63	12	18	141	51	2,675	508	20	4	74
Clarke	D	70	26	72	10,080	18	29	....	13	14	58	2	....	30	74	6	65
	F	905	426	698	12,766	34	385	16	186	650	89	16	16,240	2,619	28	178	818
Columbia	D	36	14	41	8	7	25	2	2	46	61	19	50	46	143	17	192
	F	25	8	27	14	9	22	....	38	29	10	5	2,400	6	121	94	136
Cowlitz	D	280	393	22	1,362	2	185	8	50	7	25	83	2,300	222	218	81	114
	F	137	36	36	38	6	83	1	6	5	41	....	1,325	67	....	9	83
Douglas	D	527	541	70	39	68	106	1	3	25	111	18	1,348	8	17	125	920
	F	236	34	23	55	85	80	....	12	28	55	52	10,845	42	120	6,708	102
Ferry	D	56	38	12	10	4	20	1	2	718	24	....	600	36	....	4	10
	F	366	84	5	140	6	140	....	5	20	149	99	3,175	48	161	181	122
Franklin	D	106	24	1	11	6	11	2	38	12	18	6	92	24	124	239	205
	F	24	2	5	8	1	4	....	4	9	44	16	72	33	45	62	86
Garfield	D	50	9	11	25	2	36	1	10	320	25	26	318	64	12	14	58
	F	49	5	12	65	4	7	1	5	27	45	28	344	33	164	71	117
Grant	D	4,540	772	171	243	375	363	16	15	358	55	67	12,400	3	581	866	755
	F	127	25	20	32	57	42	3	253	81	14	21	1,150	26	6	153	232
Grays Harbor ..	D	296	96	12	65	....	49	14	1	18	729	175	3,847	1,067	362	21	236
	F	408	79	90	147	11	188	8	13	223	295	182	3,642	63	461	431	1,755
Island	D	1,546	94	69	101	7	141	9	11	44	223	187	3,350	177	283	22	166
	F	405	95	29	133	4	104	3	....	10	45	22	2,850	259	54	7	104
Jefferson	D	....	109	4	202	9	3	3	....	5	36	6	50	161	112	....	48
	F	34	16	16	9	2	20	....	2	....	34	13	1,974	14	19	100	108
King	I	6.047	1,980	251	1,198	102	3,276	168	186	487	2,591	1,528	37,565	2,372	4,120	6,480	17,279
	I	1,108	436	146	321	41	512	23	268	150	363	1,141	17,923	280	1,401	415	2,572
Kitsap	I	799	386	212	494	85	572	29	158	95	272	88	3,874	475	590	60	1,368
	F	36	....	....	5	....	7	....	8	24	42	48	5,475	35	151	17	46

Kittitas	D	661	200	163	176	131	313	7	22	135	312	398	14,572	192	227	510	464
	F	157	80	15	18	11	68	4	2	18	52	89	8,511	33	60	74	696
Klickitat	D	8,000	1,600	30	70	25	300	....	140	59	25	....	....	30	....	20	76
	F	948	258	110	204	24	108	4	87	335	121	196	11,220	79	209	148	231
Lewis	D	84	42	18	66	5	81	....	18	6	15	23	500	75	12	22	664
	F	1,221	272	132	438	18	662	19	277	152	198	221	4,954	1,143	712	262	1,631
Lincoln	D	1,812	326	64	152	106	406	13	7	83	....	22	712	99	987	403	1,358
	F	189	128	329	65	56	62	1	9	41	241	36	10,117	45	887	786	249
Mason	D	112	85	17	44	....	79	....	....	39	82	2	1,400	12	260	6	8
	F	28	....	21	9	....	3	....	....	5	....	....	4,200	2	50	8	71
Okanogan	D	34,439	858	287	203	506	661	19	324	1,016	294	170	2,408	33	50	102	136
	F	6,081	5,148	72	3,222	67	3,777	26	144	358	190	174	17,180	136	343	1,068	426
Pacific	D	182	31	1	52	....	29	4	....	16	155	12	687	215	24	4	278
	F	154	24	6	55	....	18	....	12	3	44	43	3,080	3	60	21	185
Pend Oreille	D	206	87	13	52	1	48	1	1	14	48	16	1,050	57	374	18	36
	F	83	22	2	9	1	8	2	12	12	235	32	640	60	456	120	51
Pierce	D	347	322	35	200	3	174	3	32	257	578	5,949	18,770	1,011	28,949	87	1,841
	F	703	174	85	225	9	513	26	153	91	130	45	9,659	221	228	2,124	1,730
San Juan	D	90	243	11	46	27	69	3	2	....	90	7	100	18	....	312	505
	F	....	....	....	....	....	....	....	....	....	....	....	1,200	....	....	....	....
Skagit	D	1,239	361	86	802	42	657	19	341	125	115	73	4,152	215	89	533	1,778
	F	283	16	14	45	9	63	11	8	33	22	5	4,248	52	133	60	387
Skamania	D	42	8	56	18	6	11	7	....	18	30	6	....	31	....	39	....
	F	18	367	25	36	5	50	1	15	1	52	2	737	12	....	18	68
Snohomish	D	1,561	356	235	318	12	563	54	60	58	478	173	1,219	453	1,619	137	1,921
	F	933	385	71	311	24	924	11	154	68	262	106	17,867	186	540	498	1,481
Spokane	D	5,585	262	220	240	118	1,106	26	45	185	5,030	118	85,860	515	15,500	2,038	10,024
	F	3,518	862	388	1,227	88	1,029	47	211	1,083	862	397	409,295	582	729	950	4,205
Stevens	D	1,403	273	181	191	47	229	11	3	169	124	40	7,825	309	550	71	341
	F	820	156	86	144	35	366	17	40	86	239	115	21,012	505	149	187	452
Thurston	D	152	58	6	29	5	70	4	7	15	1,525	12	1,125	904	1,108	110	75
	F	347	549	23	120	12	709	6	39	40	72	46	4,145	78	82	56	351
Wahkiakum	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	68	15	....	15	....	....	15	19	....	22	....	250	23	10	25	155
Walla Walla ...	D	160	30	70	604	12	104	20	82	2,517	45	67	2,500	171	35	677	440
	F	185	18	209	790	29	155	2	75	185	30	98	9,149	77	44	491	1,224
Whatcom	D	231	49	9	45	24	130	7	16	8	36	18	475	270	112	28	134
	F	794	175	23	176	1	272	8	105	56	94	42	4,645	460	390	267	2,288
Whitman	D	678	127	72	238	101	291	12	13	99	233	40	2,874	311	713	889	340
	F	313	155	123	35	67	113	74	51	1,181	143	87	7,363	120	184	558	1,887
Yakima	D	12,766	1,501	1,036	1,423	1,778	781	2	329	149	562	78	900	114	224	551	836
	F	870	78	10	2,221	....	124	1	872	4,049	....	22	9,025	38	....	63	410
Totals.........		123,575	27,605	7,105	44,273	5,595	23,849	889	5,564	24,568	19,088	12,486	869,638	19,120	86,326	33,259	71,466

COUNTIES RECEIVING WASHINGTON-GROWN VEGETABLES—1914

(The figures below give the number of standard size packages.)

COUNTIES	Potatoes	Onions	Cabbage	Lettuce	Cauli-flower	Mixed Vegetables	Celery	Aspar-agus	Rhubarb	Cucum-bers	Turnips	Egg Plant	Car-rots	Corn
Clarke	500	100	....	....	....	....								
Garfield	....	....	....	....	....	2,400	....	....	....	....	....	....	....	....
Grays Harbor.	9,750	1,000	....	....	....	....	400	....	630	167	....	90	600	250
King	524,422	17,384	7,398	9,702	148	19,687	3,035	15,377	12,115	11,307	2,942	2,874	1,975	8,011
Lewis	4,250	1,000	1,400	3,400	....	1,200	600	630	215	80	1,200	85	500	567
Pacific	8,500	93	600	380	112	250	115	....	401	30	250	....	250	318
Pierce	83,250	5,500	1,000	....	....	9,000	....	....	....	150	....	2,000	....	1,450
Spokane	10,000	5,000	5,000	....	....	7,800	1,500	....	600	264	....	500	250	1,250
Wahkiakum ..	....	....	....	....	....	....	50	....	....	100	....	....	....	....
Totals....	640,672	30,077	15,398	13,542	260	40,337	5,700	16,007	13,961	12,098	4,392	5,499	3,575	6,841

NOTE: Additional vegetables, as follows, were shipped into King county from other counties in the state, during this year: Rutabagas, 387; squash, 1,024; parsnips, 264; peppers, 3,814; spinach, 4, 161; beets, 900.

COUNTIES RECEIVING WASHINGTON GROWN VEGETABLES, YEAR 1915.

(The figures below give the number of standard size packages.)

COUNTIES	Potatoes	Onions	Egg Plant	Cabbage	Cucumbers	Celery	Rhubarb	Carrots	Green Corn	Other Vegetables
Spokane	15,000	4,500	....	1,200	....	....	....	....	....	....
Cowlitz	750	....	....	....	....	....	....	....	....	....
Pierce	117,675	9,976	1,388	....	85	....	147	....	....	7,588
Grays Harbor	15,500	1,000	....	....	868	569	600	150	299	....
Pacific	9,000	950	....	500	818	850	204	150	200	240
Lewis	8,750	1,250	....	1,000	1,200	800	....	....	700	2,600
King	477,244	36,159	....	2,014	7,844	....	11,362	5,288	....	68,160
Columbia	1,000	750	....	400	....	....	....	....	....	1,200
Walla Walla	....	....	....	8,600	....	600	....	....	....	....
Garfield	500	250	....	400	....	....	....	....	....	600
Whatcom	16,098	1,884	528	1,962	1,350	1,922	881	1,425	1,725	400
Snohomish	24,200	1,700	100	600	325	525	860	1,060	350	110

NURSERY STOCK PRODUCTION—SEASON 1914.

COUNTIES	Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Nuts	Grape Vines	Trees	Shrubs
Asotin	50,000	10,000	8,000	2,000	1,000					500
Benton	434,000	30,000	13,200	10,000		4,400				15,800
Chelan	105,000	1,790	5,000							1,000
Clarke	500		250	75,000			200			
Cowlitz	6,000	142,000	500	5,500						2,000
Douglas	20,000			500	500					
Grant	650,000	90,000	2,000	3,000	3,800	18,000	3,500		85,000	20,000
King	30,500	35,000	1,000	9,000		20,000				19,300
Klickitat	10,000									
Mason								100,000		
Okanogan	75,000									
Pierce										44,788
Skagit	1,000	300		500		1,500				1,500
Spokane	224,000	10,400	10,100	1,550	100	1,325	1,012		95,500	125,250
Walla Walla										3,600
Yakima	648,696	172,956	171,854	68,971	32,267	43,533	13,655			160,105
Totals	2,254,696	492,446	206,904	176,821	71,867	88,758	18,367	100,000	180,500	393,843

NOTE: In addition to the above King county produced 16,000 berries and Yakima county produced 5,000,000 seedlings.

NURSERY STOCK PRODUCTION, YEAR 1915.

COUNTIES	Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Nuts	Grapes	Shrubs and Trees	
									Deciduous	Evergreen
Spokane	5,000					200			21,500	5,500
Clarke	800			50,500						
Klickitat	10,000	1,000	800		250	150				
Mason								200,000		
Lewis									580	
King	53,000	43,500	2,200	12,000	250	23,000	500		12,850	21,600
Walla Walla									5,200	
Asotin	8,000	1,000	2,000	300	300	500				
Yakima	170,000	78,000	94,840	192,000		134,300			196,075	218,600

IMPORTATIONS OF FOREIGN NURSERY STOCK.

FOR PERIOD JUNE 15, 1914, TO JULY 1, 1915.

FROM	TO	Ornamental Deciduous Trees and Shrubs	Coniferous Trees	Evergreens	Field Grown Florist Stock	Fruit Trees and Fruit Tree Stock	All Other Plants	No. of Cases
Scotland	Bellingham			100				1
Sweden	Cape Horn						50	1
Belgium	Everett	104		105			95	3
Ireland	Lynden	48						1
France	Mt. Vernon	2,250		900		2,000		2
Holland	Pt. Townsend.	280	12	45	50			2
Belgium	Pt. Townsend.	30		25				1
France	Prosser	2,925		75				1
Belgium	Snohomish	50						1
Canada	Spokane	135						1
France	Spokane	4,500	200	1,700				1
Belgium	Spokane	885		55			181	7
Holland	Spokane	1,814		10				3
Holland	Seattle	17,673		3,144		30		129
Canada	Seattle	7					2,160	23
Ireland	Seattle	63					500	1
England	Seattle	765		3	24		94	7
Belgium	Seattle	808		151			886	34
Japan	Seattle	2,732	86	817	1,169			43
France	Seattle	200		5,564		15,660		5
Ireland	Tacoma	8						1
Belgium	Tacoma	300					117	9
Japan	Tacoma	232		260	191			9
Holland	Toppenish					4,200		1
Belgium	Walla Walla	102						1
France	Wenatchee	1,849				43,000		3
France	Wapato	64,100		101,075		193,960	15,265	108
Totals		100,860	298	114,119	1,434	258,840	19,408	394

Total imported plants, 494,959.

NURSERY STOCK FROM FOREIGN COUNTRIES.

JULY 1, 1915, TO JULY 1, 1916.

FROM	TO	Ornamental Deciduous Trees and Shrubs	Coniferous Trees	Evergreens	Field Grown Florist Stock	Fruit Trees and Fruit Tree Stock	All Other Plants	No. of Cases
Belgium	Seattle	535		772				21
Holland	Seattle	14,013		4,817	700		200	123
Holland	Seattle							*41
British Columbia	Seattle			100			636	20
England	Seattle	3		70		250		3
England	Thomas	5,000						1
Japan	Seattle	6,975		96	157		132	24
Ireland	Seattle	130						1
France	Seattle	5,560		3,762				8
Japan	Christopher	70			430			5
Belgium	Thomas	190						4
Belgium	Pt. Townsend	55						1
Japan	Kirkland				125			2
Japan	Port Angeles	1,000						5
Holland	Walla Walla	104						1
England	Walla Walla	300						1
Ireland	Mt. Vernon	153						1
Holland	Mt. Vernon	1,440						2
Belgium	Snohomish	150						2
Holland	Snohomish	1,245		110				5
Holland	Everett	4,088		29				8
Ireland	Everett	11						1
Holland	Tacoma	1,580		91				10
Belgium	Tacoma	140						2
Holland	Puyallup	285						1
Belgium	No. Yakima	25						1
France	Wapato	132,550	4,420	1,100	11,000	7,000	500	34
France	Wapato							†6
Belgium	Spokane	465						8
England	Spokane	818						1
Japan	Spokane	311						8

* No. invoice. † 374 pounds pear and 85 quarts cherry seeds.

ORCHARD PLANTINGS FOR FALL 1914.

AS SHOWN BY COMPILATION OF POST CARD NOTICES.

D—Nursery stock grown within Washington. F—Grown outside of the state.

COUNTIES		Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Quinces	Nuts	Grape Vines	Raspberries	Blackberries	Strawberries	Miscellaneous Berries	Miscellaneous Roots	Ornamental Trees	Ornamental Shrubs
Adams	D	70	26	18	19	16	61	....	....	76	24	29	100	6	....	91	163
	F	7	4	3	2	....	2	1	....	3	....	....	....	4	10	34	20
Asotin	D	21	3	14	1	2	9	....	26	6	6	10	....	14	....	2	31
	F	5	....	14	....	3	1	....	12	2	6	....	....	....	....	6	3
Benton	D	36	9	19	12	8	46	2	1	260	514	204	....	1,146	3	....	146
	F	100	561	....	5,500	9	210	....	....	25	....	....	....	110	....	6	12
Chehalis	D	243	58	11	100	1	72	10	133	....	147	1,163	400	183	185	60	444
	F	369	61	19	107	....	99	7	8	27	208	177	400	75	122	191	1,278
Chelan	D	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	172	1,295	92	1,080	85	156	10	20	4	....	2	....	....	100	7	48
Clallam	D	236	54	10	72	4	58	2	6	8	14	72	200	208	54	29	129
	F	26	2	....	8	....	12	2	....	1	....	....	....	....	....	....	2
Clarke	D	71	21	39	49	4	47	1	21	12	....	4	24	13	....	6	16
	F	792	365	364	3,742	47	267	12	447	160	77	118	200	46	58	53	391
Columbia	D	64	8	24	9	13	81	2	4	56	42	38	300	55	1,000	41	222
	F	851	136	1,031	11	11	139	2	14	135	74	40	850	16	544	75	69
Cowlitz	D	164	18	53	36	26	62	4	46	46	....	8	....	89	....	5	12
	F	266	37	37	38	28	65	20	56	18	64	31	5,250	104	61	5	62
Douglas	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	12	....
	F	122	13	5	21	2	33	....	8	2	10	2	475	4	59	57	11
Ferry	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	6	....	....	3	....	....	....	4	2	10	....	150	4	44	2	5
Franklin	D	23	12	17	12	3	17	1	....	18	6	8	....	....	....	6	24
	F	18	9	8	6	10	19	1	60	6	....	....	....	....	....	794	145
Garfield	D	31	2	9	12	5	38	....	10	37	24	16	100	....	....	15	55
	F	4	6	6	1	....	6	....	....	12	6	14	50	....	....	50	....
Grant	D	239	38	54	67	30	89	....	....	31	12	4	....	18	6	78	92
	F	148	10	12	14	5	23	....	12	30	23	18	250	14	88	244	43
Island	D	289	61	16	99	7	92	10	4	18	13	80	328	62	....	8	18
	F	212	50	10	62	....	96	....	134	28	306	102	1,150	80	....	20	164
Jefferson	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	8	2	3	3	....	14	....	....	....	....	....	....	....	....	5	....
King	D	2,519	1,042	136	527	21	1,089	149	97	101	489	508	1,529	1,426	489	357	2,568
	F	481	221	98	256	88	990	38	136	61	251	58	7,479	558	13,684	950	1,788
Kitsap	D	581	256	61	171	27	383	41	28	65	168	109	8,863	201	25	83	757
	F	209	118	21	55	4	241	3	60	12	6	22	200	....	....	12	87

Kittitas	D	167	161	45	87	18	184	....	7	21	227	18	88	81	4	81	582
	F	2,052	74	1	4	3	14	....	1	1	....	....	70	1	4	7	40
Klickitat	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	221	1	10	17	8	11	....	62	1,204	260	....	106	6	135	56	28
Lewis	D	1,025	278	301	381	11	380	48	83	75	273	1,118	7,430	418	50	47	420
	F	1,307	365	58	497	5	543	24	328	65	407	412	1,050	454	217	470	627
Lincoln	D	870	92	88	69	69	148	1	8	77	92	13	6	178	12	450	522
	F	682	106	42	166	34	208	2	20	6	35	624	511	78	44	150	77
Mason	D	297	70	28	85	....	109	11	15	15	6	29	103	22	18	11	102
	F	84	6	3	11	2	6	2	3	....	....	....	....	....	....	....	....
Okanogan	D	8,106	2	6	2	....	7	1	....	4	50	....	....	....	....	....	....
	F	....	....	....	....	....	....	....	....	62	....	....	....	....	....	16	18
Pacific	D	218	97	4	72	4	90	1	5	18	55	51	875	211	136	49	227
	F	193	54	1	89	....	41	....	11	3	40	115	150	54	50	37	83
Pend Oreille	D	1,595	184	61	253	54	303	88	16	34	481	434	7,538	427	84	60	121
	F	66	4	58	28	....	2	....	4	2	10	....	150	4	44	22	5
Pierce	D	1,620	798	84	498	6	700	36	87	85	358	245	2,084	583	....	106	5,450
	F	1,056	260	98	316	8	621	13	189	156	77	95	1,014	215	932	324	1,768
Skagit	D	692	223	49	209	17	531	29	20	80	523	131	3,237	414	539	65	690
	F	570	202	56	181	13	343	6	82	82	179	53	675	109	....	97	662
Skamania	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	59	65	2	18	2	10	2	....	....	....	12	....	....	....	4	12
Snohomish	D	1,291	500	98	436	24	462	39	51	219	154	146	5,957	778	468	213	1,021
	F	1,806	385	154	506	16	950	50	402	115	296	376	5,550	251	123	660	2,424
Spokane	D	654	119	93	163	21	164	11	1	59	94	42	2,100	1,448	58	181	149
	F	1,570	120	172	113	39	218	5	20	121	74	69	625	19	265	300	1,795
Stevens	D	255	84	18	68	8	103	4	8	10	83	80	300	55	....	14	39
	F	12	4	8	3	....	25	....	10	2	10	....	275	4	44	2	9
Thurston	D	460	807	24	175	4	843	11	4	42	57	217	1,275	131	2	347	104
	F	1,161	208	29	108	1	489	....	27	233	46	59	500	201	50	31	388
Wahkiakum	D	27	11	....	3	7	19	2	....	....	55	61	275	20	....	....	12
	F	....	....	....	....	....	12	....	....	....	....	....	....	....	2	1	....
Walla Walla	D	32	10	25	14	2	90	....	4	18	....	8	....	....	28	1	7
	F	2,978	8	130	60	14	110	2	23	104	143	35	500	36	....	70	784
Whatcom	D	592	492	47	124	10	438	24	40	29	172	243	50	69	8	88	325
	F	681	221	85	185	8	559	14	112	30	241	66	3,708	278	132	260	874
Whitman	D	107	19	9	14	10	73	2	1	32	96	297	200	32	....	104	235
	F	629	112	269	174	90	388	5	10	229	858	455	5,524	777	....	600	1,134
Yakima	D	12	4	....	....	....	13	2	....	....	3	3	....	....	....	122	64
	F	85	51	34	69	120	54	1	1,742	8	16	81	350	4	74	479	253
San Juan	D	80	16	2	33	7	71	2	2	7	72	100	818	115	10	11	79
	F	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Totals.........		41,048	10,706	4,376	17,271	1,034	18,749	751	4,695	4,359	7,992	8,400	76,377	11,854	20,055	8,810	29,906

IMPORTATION OF FRUIT INTO WASHINGTON.

FROM ALL POINTS OUTSIDE OF STATE DURING SEASON OF 1914.

(Figures indicate number of standard size packages.)

COUNTIES	Apples	Pears	Peaches	Plums and Prunes	Apri-cots	Cher-ries	Oranges	Lemons	Grapes	Bananas	Canta-loupes	Water-melons (pounds)	Berries	Toma-toes	Grape Fruit	Mixed Fruit
Asotin	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2,400
Clarke	500	......	......	100	......	50	1,000	500	300	1,000	400	15,000	1,250	300	......	......
Columbia	......	......	......	......	......	......	750	250	......	350	......	......	......	......	......	1,200
Cowlitz	......	......	......	......	100	......	800	250	250	400	600	10,000	100	......	......	......
Garfield	......	......	......	......	......	......	400	250	......	250	......	......	......	......	......	......
Grays Harbor	3,150	1,890	2,200	......	300	150	5,000	2,500	6,500	7,000	1,750	300,000	......	......	......	200
King	15,635	4,706	52,479	10,392	5,869	7,477	218,766	38,181	140,005	130,325	60,826	19,500	83,818	112,682	25,013	......
Klickitat	......	......	......	......	......	......	1,200	700	......	1,500	......	......	......	......	......	200
Lewis	100	150	1,260	250	435	561	8,000	2,500	5,200	5,950	1,400	480,000	600	5,500	......	......
Pacific	630	135	508	180	118	85	3,229	510	1,775	2,122	508	60,000	1,218	1,624	......	......
Pierce	2,520	680	4,000	2,000	2,000	4,800	70,000	9,500	49,200	46,550	15,050	1,264 000	15,120	8,800	......	15,000
Skamania	......	......	......	......	......	......	200	75	......	150	15	......	......	......	......	20
Spokane	1,260	......	1,000	1,000	208	3,400	67,000	22,000	2,600	55,300	9,450	870,000	28,980	25,300	7,000	33,600
Thurston	30	......	600	......	......	......	700	150	140	......	......	......	200	......	100	......
Wahkiakum	500	100	......	150	50	75	125	50	125	100	200	12,600	1,050	400	......	50
Walla Walla	......	......	2,520	......	......	......	5,000	2,500	1,300	1,750	......	......	1,260	......	......	1,880
Yakima	......	......	......	......	......	......	6,000	1,500	......	6,000	350	......	160	......	......	......
Totals	24,325	7,611	64,567	14,022	9,080	16,598	388,170	81,366	207,895	258,747	90,549	3,081,100	133,251	154,606	32,113	54,580

NOTE: The following fruits were imported into King county during the year ending January 1, 1915: Quinces, 405; pineapple, 964; pomegranates, 413; casabas, 2,340; tangerines, 140; Mexican limes, 138; persimmons, 397; Japanese pears, 371; Japanese oranges, 38,671.

IMPORTS, FRUIT GROWN OUTSIDE OF STATE, YEAR 1915.

(Figures indicate number of standard size packages.)

COUNTIES	Apples	Pears	Peaches	Oranges	Bananas	Lemons	Grapes	Plums and Prunes •	Apricots	Cherries	Watermelons	Tomatoes	Cantaloupes	Strawberries	Other Berries and Cr'nberries	Other Fruit
King	6,502	3,668	22,700	172,626	101,075	41,830	78,373	10,508	2,961	5,617	(pounds) 4,380,000	72,304	47,985	49,044	2,492	53,725
Thurston	600												1,100		40 bbl.	
Franklin				1,000	700	700										
Benton				1,560	1,000	1,050										
Lewis	680		1,000	5,000	5,250	1,500	6,500	300	685	601	360,000	5,500	1,750	630		
Pacific	250	100	100	2,500	2,000	506	1,200	200	201	70	30,000	1,300	400	500	150	100
Grays Harb'r.	12,050	3,780	9,000	4,201	7,800	2,122	7,800	1,000	1,590	650	86,000	5,500	2,100	630	100	
Skamania			500	490	520	370					20,000		150			
Wahkiakum	2,000	350	1,200	225	110	50	400		75		5,000	400	75	600	150	
Klickitat				2,000	1,750	1,200		14,000 lbs dried					500			
Clarke	1,000			1,000	600	720	500				70,000		335	800		100
Spokane			2,000	81,500	56,700	32,500	26,000				1,890,000	8,800	16,800	4,410	2,000	
Pierce	1,273	255	2,568	51,739	35,300	10,141	22,705		542	295	5,508	3,127	13,280	4,625	10,028	12,332
Cowlitz	300			700	450	300	375		1,000		50,000	1,000	350	400	75	60
Garfield				500	350											
Walla Walla				5,500	8,400	4,000					450,000		1,440	680		
Columbia				500	350								350			
Yakima				4,750	3,888	2,800	150				24,000	250	850	1,200	250 lbs.	
Whatcom	649	1,264	6,346	17,364	9,267	2,130	10,074	1,278	521	826	181,798	10,134	4,375	7,334	425	
Snohomish				6,800	14,440	1,700	10,900	1,000			120,000	1,000	1,700	2,300		580

IMPORTATION OF VEGETABLES INTO WASHINGTON.

FROM ALL POINTS OUTSIDE OF STATE DURING YEAR 1914.

(The figures below give the number of standard size packages.)

COUNTIES	Potatoes	Onions	Cabbage	Lettuce	Cauliflower	Mixed Vegetables	Sweet Potatoes	Celery	Asparagus	Rhubarb	Cucumbers	Turnips	Egg Plant	Carrots	Corn
Asotin						4,200									
Clarke															300
Columbia	500														
Cowlitz	20														
Grays Harbor	7,250	1,750	2,000					300			156				
King	50,551	48,911	22,629	31,320	9,210	20,273	24,011	10,196	16,604	1,955	708	1,532	2,570	1,491	246
Klickitat		2,000	1,800					250			500				
Lewis	2,250	1,750	600	609			4,000	300		51	200				
Pacific	500	1,074	200	99	300			100					32	50	
Pierce	6,750	10,250	6,000			56,400		5,100		290	189				3,000
Skamania															10
Spokane	8,000	8,000	1,000			43,200	12,300	1,200			135			250	
Thurston		500							300						
Wahkiakum	1,000	2,000	500			50		50		125	100		50		50
Walla Walla	7,000		2,000			1,800									
Yakima			600					300							
Totals	83,821	76,235	37,329	32,028	9,510	125,923	40,311	17,796	16,904	2,421	1,985	1,532	2,652	1,791	3,606

NOTE: Additional vegetables were imported into King county from points outside of the state as follows: Peppers, 13,600; peas, 2,072; beets, 80; beans, 508; Brussels sprouts, 352; squash, 850; parsnips, 125; garlic, 488; artichokes, 882.

IMPORTS, VEGETABLES GROWN OUTSIDE WASHINGTON, YEAR 1915.

(The figures below give the number of standard size packages.)

COUNTIES	Potatoes	Onions	Egg Plant	Cabbage	Cucumbers	Celery	Rhubarb	Carrots	Green Corn	Other Vegetables	Sweet Potatoes	Lettuce	Cauliflower	Green Beans	Peppers
King	99,893	45,764	....	20,530	....	10,481	1,919	1,896	....	122,963	....	....	....	....	......
Thurston	....	900	....	....	....	....	....	....	....	....	....	....	....	....	......
Lewis	1,500	2,400	20	600	133	300	27	....	....	....	1,500	800	....	....	......
Pacific	300	100	18	122	33	90	6	50	....	700	....	....	....	....	......
Grays Harbor	8,100	2,100	105	2,400	367	250	....	....	....	....	150	....	75	90	95
Skamania	....	100	....	75	....	....	....	....	40	....	....	....	....	....	......
Wahkiakum	1,000	400	....	....	....	....	....	....	68	....	....	....	....	....	......
Klickitat	2,000	2,780	300	....	....	63	....	....	80	....	....	....	....	....	......
Clarke	2,600	400	60	40	....	....	....	....	80	....	....	....	....	....	......
Spokane	15,600	7,500	....	6,000	....	3,600	....	....	....	....	16,500	....	....	....	......
Pierce	23,722	10,799	....	4,043	277	2,332	275	....	40	25,936	....	....	....	....	......
Cowlitz	750	1,000	....	5,000	....	....	....	....	....	7,500	....	....	....	....	......
Walla Walla	28,500	12,000	....	....	....	....	....	....	....	....	....	....	....	....	......
Yakima	1,400	950	....	740	175	960	100	....	....	....	....	....	....	....	......
Whatcom	5,227	8,096	210	1,905	600	600	312	150	....	....	....	....	....	....	......
Snohomish	....	1,800	....	300	....	255	12	....	....	....	....	....	....	....	......

TOTAL AMOUNT IN POUNDS OF FRUITS AND VEGETABLES USED IN BY-PRODUCTS.—SEASON 1914.

COUNTIES	Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Beans	Squash	Grapes	Raspberries
Asotin	....	155,200	84,000	....	6,960	92,400	....	....	....	....
Benton	42,000	....	....	....	....	....	....	....	660,000	....
Clarke	....	310,782	....	9,473	....	144,129	....	....	14,821	....
Island	207,600	....	....	16,200	....	6,000	2,400	....	....	27,000
King	954,994	766	302	....	3,945	18,380	....	....	4,129	135,542
Klickitat	134,400	43,400	108,400	64,140	152,400	84,940	25,680	....	....	....
Pierce	623,495	198,854	20,000	114,765	....	206,071	1,985	37,704	....	3,300,071
San Juan	420,000	102,000	....	30,000	....	18,840	....	....	....	36,000
Skagit	25,000	....	....	....	....	....	....	....	....	....
Skamania	....	....	....	....	....	....	....	....	....	....
Snohomish	....	24,600	....	40,200	....	4,200	....	....	....	229,800
Spokane	7,144,000	....	....	....	....	3,000	3,000	....	....	....
Thurston	975,000	450,000	228,000	492,000	....	402,000	36,000	30,000	....	174,000
Walla Walla	100,000	....	....	....	....	....	....	....	....	....
Whatcom	758,580	276,280	....	596,760	....	317,460	409,380	....	....	1,043,731
Yakima	2,817,511	600,000	150,000	....	....	....	....	....	....	....
Totals	14,202,580	2,161,862	585,702	1,368,538	163,305	1,297,420	478,445	67,704	678,950	4,946,144

COUNTIES RECEIVING WASHINGTON-GROWN VEGETABLES—1914

(The figures below give the number of standard size packages.)

COUNTIES	Potatoes	Onions	Cabbage	Lettuce	Cauli-flower	Mixed Vegetables	Celery	Aspar-agus	Rhubarb	Cucum-bers	Turnips	Egg Plant	Car-rots	Corn
Clarke	500	100	....	....	....	....								
Garfield	....	....	....	....	....	2,400	....	....	....	....	....	....	....	....
Grays Harbor.	9,750	1,000	....	....	....	....	400	....	630	167	....	90	600	250
King	524,422	17,384	7,398	9,762	148	19,687	3,035	15,377	12,115	11,307	2,942	2,874	1,975	3,011
Lewis	4,250	1,000	1,400	3,400	....	1,200	600	630	215	80	1,200	35	500	567
Pacific	8,500	93	600	380	112	250	115	....	401	30	250	....	250	313
Pierce	83,250	5,500	1,000	....	....	9,000	....	....	....	150	....	2,000	....	1,450
Spokane	10,000	5,000	5,000	....	....	7,800	1,500	....	600	264	....	500	250	1,250
Wahkiakum ..	....	....	....	....	....	....	50	....	....	100	....	....	....	....
Totals....	640,672	30,077	15,398	13,542	260	40,337	5,700	16,007	13,961	12,098	4,392	5,499	3,575	6,841

NOTE: Additional vegetables, as follows, were shipped into King county from other counties in the state, during this year: Rutabagas, 387; squash, 1,024; parsnips, 264; peppers, 3,814; spinach, 4, 161; beets, 900.

COUNTIES RECEIVING WASHINGTON GROWN VEGETABLES, YEAR 1915.

(The figures below give the number of standard size packages.)

COUNTIES	Potatoes	Onions	Egg Plant	Cabbage	Cucumbers	Celery	Rhubarb	Carrots	Green Corn	Other Vegetables
Spokane	15,000	4,500	....	1,200	....	....	....	....	....	....
Cowlitz	750	....	....	....	....	....	....	....	....	....
Pierce	117,675	9,976	1,383	....	35	....	147	....	....	7,588
Grays Harbor	15,500	1,000	....	....	868	569	600	150	299	....
Pacific	9,000	950	....	500	818	350	204	150	200	240
Lewis	3,750	1,250	....	1,000	1,200	300	....	....	700	2,600
King	477,244	36,159	....	2,014	7,844	....	11,362	5,288	....	68,160
Columbia	1,000	750	....	400	....	....	....	....	....	1,200
Walla Walla	....	....	....	8,600	....	600	....	....	....	....
Garfield	500	250	....	400	....	....	....	....	....	600
Whatcom	16,698	1,884	528	1,962	1,350	1,922	881	1,425	1,725	400
Snohomish	24,200	1,700	100	600	825	525	800	1,060	850	110

NURSERY STOCK PRODUCTION—SEASON 1914.

COUNTIES	Apples	Pears	Peaches	Plume and Prunes	Apricots	Cherries	Nuts	Grape Vines	Trees	Shrubs
Asotin	50,000	10,000	3,000	2,000	1,000	...	...	...	...	500
Benton	434,000	30,000	13,200	10,000	...	4,400	...	...	...	15,800
Chelan	105,000	1,790	5,000	...	...	...	...	...	...	1,000
Clarke	500	...	250	75,000	...	...	200	...	...	...
Cowlitz	6,000	142,000	500	5,500	...	...	...	...	...	2,000
Douglas	20,000	...	...	500	500	...	...	...	...	...
Grant	650,000	90,000	2,000	3,000	3,800	18,000	3,500	...	85,000	20,000
King	30,500	35,000	1,000	9,000	...	20,000	...	...	...	19,300
Klickitat	10,000	...	...	...	...	...	...	...	...	...
Mason	...	...	...	...	...	...	...	100,000	...	...
Okanogan	75,000	...	...	...	...	...	...	...	...	...
Pierce	...	...	...	...	...	...	...	...	...	44,788
Skagit	1,000	300	...	500	...	1,500	...	...	...	1,500
Spokane	224,000	10,400	10,100	1,550	100	1,325	1,012	...	95,500	125,250
Walla Walla	...	...	...	...	...	...	...	...	...	3,600
Yakima	648,696	172,956	171,854	68,971	32,267	43,533	13,655	...	...	160,105
Totals	2,254,696	492,446	206,904	176,821	71,867	88,758	18,367	100,000	180,500	393,843

NOTE: In addition to the above King county produced 16,000 berries and Yakima county produced 5,000,000 seedlings.

NURSERY STOCK PRODUCTION, YEAR 1915.

COUNTIES	Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Nuts	Grapes	Shrubs and Trees	
									Deciduous	Evergreen
Spokane	5,000	...	...	...	...	200	...	...	21,500	5,500
Clarke	800	...	...	50,500	...	...	...	...	...	...
Klickitat	10,000	1,000	800	...	250	150	...	...	...	...
Mason	...	...	...	...	...	...	...	200,000	...	...
Lewis	...	...	...	...	...	...	...	...	580	...
King	53,000	43,500	2,200	12,000	250	23,000	500	...	12,850	21,600
Walla Walla	...	...	...	...	...	...	...	...	5,200	...
Asotin	8,000	1,000	2,000	300	300	500	...	...	...	...
Yakima	170,000	78,000	94,840	192,000	...	134,300	...	...	196,075	218,600

IMPORTATIONS OF FOREIGN NURSERY STOCK.

FOR PERIOD JUNE 15, 1914, TO JULY 1, 1915.

FROM	TO	Ornamental Deciduous Trees and Shrubs	Coniferous Trees	Evergreens	Field Grown Florist Stock	Fruit Trees and Fruit Tree Stock	All Other Plants	No. of Cases
Scotland	Bellingham			100				1
Sweden	Cape Horn						50	1
Belgium	Everett	104		105			95	3
Ireland	Lynden	48						1
France	Mt. Vernon	2,250		990		2,000		2
Holland	Pt. Townsend.	280	12	45	50			2
Belgium	Pt. Townsend.	30		25				1
France	Prosser	2,925		75				1
Belgium	Snohomish	50						1
Canada	Spokane	135						1
France	Spokane	4,500	200	1,700				1
Belgium	Spokane	385		55			181	7
Holland	Spokane	1,814		10				3
Holland	Seattle	17,673		3,144		30		129
Canada	Seattle	7					2,160	23
Ireland	Seattle	63					500	1
England	Seattle	765		3	24		94	7
Belgium	Seattle	808		151			886	34
Japan	Seattle	2,732	86	817	1,169			43
France	Seattle	200		5,564		15,660		5
Ireland	Tacoma	8						1
Belgium	Tacoma	300					117	9
Japan	Tacoma	232		260	191			9
Holland	Toppenish					4,200		1
Belgium	Walla Walla	102						1
France	Wenatchee	1,849				43,000		3
France	Wapato	64,100		101,075		193,960	15,265	108
Totals		100,860	298	114,119	1,434	258,840	19,408	394

Total imported plants, 494,959.

NURSERY STOCK FROM FOREIGN COUNTRIES.

JULY 1, 1915, TO JULY 1, 1916.

FROM	TO	Ornamental Deciduous Trees and Shrubs	Coniferous Trees	Evergreens	Field Grown Florist Stock	Fruit Trees and Fruit Tree Stock	All Other Plants	No. of Cases
Belgium	Seattle	535		772				21
Holland	Seattle	14,013		4,817	700		200	123
Holland	Seattle							*41
British Columbia	Seattle			100			636	20
England	Seattle	3		70		250		3
England	Thomas	5,000						1
Japan	Seattle	6,975		96	157		132	24
Ireland	Seattle	130						1
France	Seattle	5,560		3,762				8
Japan	Christopher	70			430			5
Belgium	Thomas	190						4
Belgium	Pt. Townsend.	55						1
Japan	Kirkland				125			2
Japan	Port Angeles	1,000						5
Holland	Walla Walla	104						1
England	Walla Walla	300						1
Ireland	Mt. Vernon	153						1
Holland	Mt. Vernon	1,440						2
Belgium	Snohomish	150						2
Holland	Snohomish	1,245		110				3
Holland	Everett	4,088		29				8
Ireland	Everett	11						1
Holland	Tacoma	1,580		91				10
Belgium	Tacoma	140						2
Holland	Puyallup	285						1
Belgium	No. Yakima	25						1
France	Wapato	132,550	4,420	1,100	11,000	7,000	500	34
France	Wapato							†6
Belgium	Spokane	465						8
England	Spokane	818						1
Japan	Spokane	311						8

* No. invoice. † 374 pounds pear and 85 quarts cherry seeds.

ORCHARD PLANTINGS FOR FALL 1914.

AS SHOWN BY COMPILATION OF POST CARD NOTICES.

D—Nursery stock grown within Washington. F—Grown outside of the state.

COUNTIES		Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Quinces	Nuts	Grape Vines	Raspberries	Blackberries	Strawberries	Miscellaneous Berries	Miscellaneous Roots	Ornamental Trees	Ornamental Shrubs
Adams	D	70	26	18	19	16	61	....	....	76	24	29	100	6	....	91	163
	F	7	4	3	2	....	2	1	....	3	....	....	....	4	10	34	20
Asotin	D	21	3	14	1	2	9	....	26	6	6	10	....	14	....	2	31
	F	5	....	14	....	3	1	....	12	2	6	....	....	....	....	6	3
Benton	D	36	9	19	12	3	46	2	1	260	514	204	....	1,146	3	....	146
	F	100	561	....	5,500	9	210	....	....	25	....	....	....	110	....	6	12
Chehalis	D	243	58	11	100	1	72	10	133	....	147	1,163	400	183	185	60	444
	F	369	61	19	107	....	99	7	8	27	208	177	400	75	122	191	1,278
Chelan	D	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	172	1,295	92	1,080	85	156	10	20	4	....	2	....	....	100	7	48
Clallam	D	236	54	10	72	4	58	2	6	8	14	72	200	208	54	29	129
	F	26	2	....	3	....	12	2	....	1	....	....	....	....	....	....	2
Clarke	D	71	21	39	49	4	47	1	21	12	....	4	24	13	....	6	16
	F	792	365	364	3,742	47	267	12	447	160	77	118	200	46	58	53	391
Columbia	D	64	8	24	9	13	31	2	4	56	42	38	300	55	1,000	41	222
	F	851	136	1,031	11	11	189	2	14	135	74	40	850	16	544	75	69
Cowlitz	D	164	18	53	36	26	62	4	46	46	....	8	....	89	....	5	12
	F	266	37	37	38	28	65	20	56	18	64	31	5,250	104	61	5	62
Douglas	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	12	....
	F	122	13	5	21	2	33	....	8	2	10	2	475	4	59	57	11
Ferry	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	6	....	....	3	....	....	....	4	2	10	....	150	4	44	2	5
Franklin	D	23	12	17	12	3	17	1	....	18	6	3	....	....	....	6	24
	F	18	9	8	6	10	19	1	60	6	....	....	....	....	....	794	145
Garfield	D	31	2	9	12	5	38	....	10	37	24	16	100	....	....	15	55
	F	4	6	6	1	....	6	....	....	12	6	14	50	....	....	50	....
Grant	D	239	88	54	67	30	89	....	....	31	12	4	....	18	6	78	92
	F	148	10	12	14	5	23	....	12	30	23	18	250	14	88	244	43
Island	D	289	61	16	99	7	92	10	4	18	13	30	328	62	....	8	18
	F	212	50	10	62	....	96	....	184	28	305	102	1,150	80	....	20	164
Jefferson	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	8	2	3	3	....	14	....	....	....	....	....	....	....	....	5	....
King	D	2,519	1,042	186	527	21	1,089	149	97	101	489	508	1,529	1,426	489	857	2,568
	F	481	221	98	256	33	990	38	130	61	251	58	7,479	558	13,684	950	1,788
Kitsap	D	531	256	61	171	27	383	41	28	65	168	109	3,863	201	25	83	757
	F	209	118	21	55	4	241	3	60	12	6	22	200	....	....	12	87

Kittitas	D	167	161	45	87	18	184	....	7	21	227	18	88	31	4	81	562
	F	2,062	74	1	4	8	14	....	1	1	....	....	70	1	4	7	40
Klickitat	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	221	1	10	17	8	11	....	62	1,204	260	....	106	6	135	56	28
Lewis	D	1,025	278	301	38	11	380	48	83	75	273	1,118	7,480	418	50	47	420
	F	1,807	365	58	497	5	543	24	328	65	407	412	1,060	454	217	470	627
Lincoln	D	870	92	88	69	69	148	1	8	77	92	13	6	178	12	450	522
	F	682	106	42	166	34	208	2	20	6	85	624	511	78	44	150	77
Mason	D	297	70	28	85	....	109	11	15	15	6	29	108	22	18	11	102
	F	34	6	3	11	2	6	2	3	....	....	....	....	....	....	....	....
Okanogan	D	8,106	2	6	2	....	7	1	....	4	50	....	....	....	....	....	....
	F	....	....	....	....	....	....	....	....	62	....	....	....	....	....	16	18
Pacific	D	218	97	4	72	4	90	1	5	18	55	51	875	211	136	49	227
	F	193	54	1	39	....	41	....	11	8	40	115	150	54	50	37	83
Pend Oreille	D	1,595	184	61	253	54	303	88	16	34	481	434	7,538	427	84	60	121
	F	66	4	58	28	....	2	....	4	2	10	....	150	4	44	22	5
Pierce	D	1,620	793	84	493	6	700	36	87	35	358	245	2,084	583	....	106	5,450
	F	1,056	260	93	316	8	621	13	189	156	77	95	1,014	215	932	324	1,768
Skagit	D	692	223	49	209	17	531	29	20	30	523	131	3,237	414	539	65	690
	F	570	202	56	181	13	343	6	82	32	179	53	675	109	....	97	662
Skamania	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	59	65	2	18	2	10	2	....	....	....	12	....	....	....	4	12
Snohomish	D	1,291	500	93	436	24	462	39	51	219	154	146	5,957	773	468	213	1,021
	F	1,806	385	154	506	16	950	50	402	115	296	376	5,550	251	123	660	2,424
Spokane	D	654	119	93	163	21	164	11	1	59	94	42	2,100	1,448	58	181	149
	F	1,570	120	172	113	39	218	5	20	121	74	69	625	19	265	300	1,795
Stevens	D	255	84	18	68	8	108	4	8	10	33	30	300	55	....	14	39
	F	12	4	8	3	....	25	....	10	2	10	....	275	4	44	9	9
Thurston	D	460	307	24	175	4	843	11	4	42	57	217	1,275	131	2	347	104
	F	1,161	208	29	108	1	489	....	27	233	46	89	500	201	50	31	388
Wahkiakum	D	27	11	....	3	7	19	2	....	....	55	61	275	20	....	....	12
	F	....	....	....	....	....	12	....	....	....	....	....	....	....	2	1	....
Walla Walla	D	32	10	25	14	2	90	....	4	18	....	3	....	....	22	1	7
	F	2,978	8	130	60	14	110	2	23	104	148	35	500	36	....	70	784
Whatcom	D	592	492	47	124	10	438	24	40	29	172	243	50	69	9	88	325
	F	681	221	85	185	8	559	14	112	30	241	66	3,708	278	132	260	874
Whitman	D	107	19	9	14	10	73	2	1	32	96	297	200	32	....	104	235
	F	629	112	269	174	90	388	5	10	229	358	455	5,524	777	....	600	1,134
Yakima	D	12	4	....	....	....	13	2	....	....	3	3	....	....	....	122	64
	F	35	51	34	69	120	54	1	1,742	8	16	31	350	4	74	479	253
San Juan	D	80	16	2	33	7	71	2	2	7	72	100	818	115	10	11	79
	F	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Totals.........		41,048	10,700	4,376	17,271	1,034	13,749	751	4,695	4,359	7,992	8,400	76,377	11,854	20,055	8,810	29,905

ORCHARD PLANTINGS FOR SPRING, 1915.

AS SHOWN BY COMPILATION OF POST CARD NOTICES.

D—Nursery stock grown within Washington. F—Grown outside of the state.

COUNTIES		Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Quinces	Nuts	Grape Vines	Raspberries	Blackberries	Strawberries	Miscellaneous Berries	Miscellaneous Roots	Ornamental Trees	Ornamental Shrubs
Adams	D	80	28	8	40	26	53	3	21	18	2	20	1,102	29	54	1,424	875
	F	141	31	8	38	10	33	8	2	25	26	18	508	12	241	150	106
Asotin	D	4	2	4	2		3		17	6			1,900				10
	F	104	24	41	22	11	106	2	255	49	145	20				49	198
Benton	D	874	218	39	86	32	137	6	97	268	103	2	5,326	86	335	1,598	3,506
	F	120	273	185	276	55	1,965	9	176	2,981				240	1	24	91
Chehalis	D	809	150	29	98	12	123	5	42	40	416	110	774	116	1,000	301	671
	F	324	131	4	108		88	5	16	64	69	55	1,952	153	202	185	740
Chelan	D	8,939	1,005	107	358	438	241		21	1,347	22	22	8,700	18	22	102	1,004
	F	9,131	1,049	125	507	346	277	23	138	444	127	191	10,200	232	220	307	1,627
Clallam	D	41	476		10		4		12	2	2		675	82	83	102	5
	F	133	17	8	40	5	33	5	4	20	49	32	314	91	220	114	51
Clarke	D	119	13	21	65	1	37		29	281	24		635	59	22	86	40
	F	530	140	147	404	22	155	4	73	104	210	134	4,450	1,854	442	330	423
Columbia	D	37	8	17	9	3	23	6		11	6	2	3,000	8	8	7	110
	F	107	11	89	136		37		10	270	46	2	200	6	110	90	146
Cowlitz	D	94	59	12	29		56		8	12			650	62	6	281	4
	F	36	15	22	12	1	14	1	36	12		10	500		85	22	118
Douglas	D	923	126	38	28	8	36	7	15	81	22	26	2,547	75	16	100	179
	F	171	24	8	33	8	56		10	6	48	4	150			41	36
Ferry	D	2	3	4	4		3						4,625			2	16
	F	586	70		98		177		3	24	169	86	3,425	6	110	202	260
Franklin	D	55	4	13	26	14	38	5	22	118		2	70	154	30	281	43
	F	18	7	40	8	1	8		20	78	16	14	1,100		12	84	47
Garfield	D	16		10	2	1	23		3	7			1,400		1	39	11
	F	14					2		2					3		12	13
Grant	D	808	171	156	111	74	136	1	220								
	F	178	14	16	40	102	26	4	20				7,886	68	74	160	58
Island	D	491	118	19	95	4	86	10	7	186	182	157	1,990	40	110	504	72
	F	113	9		23		123		14	46	84	8	2,625	1,757	15	19	53
Jefferson	D	43	7		6		25			25	182	24	600			24	180
	F									3	88	110	1,225	85	2	105	50
King	D	7,724	1,376	261	1,490	68	3,119	84	220		14	2	52,497	5,162	13,887	6,070	88,331
	F	6,409	699	161	1,081	54	2,255	52	180				58,857	4,882	2,766	8,900	47,621
Kitsap	D	400	74	12	50	5	100		1	442	3,688	4,108	1,775	24	57	97	170
	F	109	15	14	49		156	4	11	344	3,790	3,902	800	6	115	54	34

Kittitas	D	590	366	39	175	9	238	2	21	28	....	22	5,499	101	121	70	1,271
	F	18	31	2	1	4	11	....	....	9	10	8	100	42	106	6	22
Klickitat	D	246	29	13	29	7	52	....	....	80	78	97	1,800	24	43	18	26
	F	1,606	128	46	51	63	118	7	232	....	10	....	1,000	17	16	2	105
Lewis	D	435	1,117	39	84	....	149	9	88	130	70	12	3,127	39	1,071	83	720
	F	449	92	74	99	2	143	2	43	362	88	11	4,512	21	81	98	556
Lincoln	D	565	99	63	45	41	154	11	7	45	42	....	7,025	46	47	734	876
	F	302	182	136	113	63	145	....	7	27	33	97	1,700	6	110	178	274
Mason	D	123	1	1	2	1	5	1	4	400	10	8	2,300	16	4	9	....
	F	49	8	3	15	....	8	....	4	129	109	2	206	6	110	58	22
Okanogan	D	1,006	102	58	70	379	67	8	76	25	24	....	8,625	58	88	412	131
	F	1,983	407	444	220	119	356	29	42	6	11	4	6,524	6	110	293	274
Pacific	D	111	29	1	25	2	28	....	....	202	58	75	3,825	44	39	59	571
	F	163	32	....	39	....	39	1	11	304	88	140	7,400	38	12	28	311
Pend Oreille	D	96	58	11	33	6	62	4	....	....	120	20	512	169	63	29	35
	F	37	7	....	32	....	11	....	....	8	50	178	300	12	220	114	64
Pierce	D	1,004	2,033	65	257	33	1,386	12	79	....	60	24	20,909	1,484	11,764	1,295	579
	F	654	314	33	156	9	1,492	22	106	....	145	79	2,874	339	688	606	3,790
San Juan	D	37	291	9	11	6	138	11	....	115	1,273	911	500	60	3	23	....
	F	6	16	16	33	....	24	1	3	112	65	332	100	....	....	....	30
Skagit	D	315	96	12	135	4	160	20	8	....	14	13	10,712	180	504	92	76
	F	133	29	32	88	....	45	2	32	....	25	18	1,262	14	12	28	2,344
Skamania	D	....	....	....	....	....	....	....	....	52	108	48	400	15	114	62	139
	F	282	302	39	27	3	55	2	7	20	45	106	....	....	....	....	....
Snohomish	D	1,306	1,621	42	268	16	559	13	10	....	....	....	7,500	1,519	999	456	970
	F	440	94	16	133	8	157	3	42	42	44	506	1,666	92	532	247	707
Spokane	D	581	135	182	91	30	172	22	46	79	264	140	43,477	168	1,113	530	1,308
	F	5,725	1,064	316	2,269	115	1,217	26	367	23	38	49	47,414	42	1,064	1,595	6,506
Stevens	D	778	165	290	164	69	209	16	14	123	110	28	2,324	87	28	48	809
	F	1,846	567	333	446	78	661	5	26	642	512	296	6,674	40	451	562	914
Thurston	D	167	910	24	27	24	66	2	7	119	71	125	5,525	64	24	38	16
	F	437	233	14	44	12	348	2,501	77	164	320	187	850	24	89	33	157
Wahkiakum	D	4	2	....	1	....	1	....	....	61	40	....	200	....	3	....	....
	F	....	....	....	....	....	....	....	....	189	15	111	....	....	....	....	....
Walla Walla	D	100	22	56	69	10	64	6	15	83	9	21	2,978	97	84	36	225
	F	11,000	5,091	229	844	60	365	....	150	426	139	122	390	131	1,359	269	485
Whatcom	D	1,583	886	101	398	16	945	20	28	98	142	86	6,606	855	948	557	850
	F	272	85	56	98	1	464	3	59	29	55	22	1,304	22	336	190	522
Whitman	D	369	40	74	44	64	157	2	9	92	148	5	11,685	27	97	13,148	4,133
	F	627	128	167	129	73	240	2	24	99	216	72	12,042	19	284	13,547	4,756
Yakima	D	21,524	8,092	2,593	2,522	131	821	15	1,684	964	1,601	147	690	20	844	323	1,396
	F	4,415	345	59	91	7	163	10	997	489	54	100	21,750	448	968	914	1,841
Totals.....	D	51,894	19,897	4,423	6,926	1,534	9,675	288	2,797	5,432	7,850	6,257	264,101	13,171	33,579	29,975	58,573
	F	48,615	11,684	2,833	7,835	1,232	11,573	2,728	3,188	7,550	6,884	7,016	172,284	8,431	10,673	29,271	75,037

ORCHARD PLANTINGS FOR FALL 1915.

AS SHOWN BY COMPILATION OF POST CARD NOTICES.

D—Nursery stock grown within Washington. F—Grown outside of the state.

COUNTIES		Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Quinces	Nuts	Grape Vines	Raspberries	Blackberries	Strawberries	Miscellaneous Berries	Miscellaneous Roots	Ornamental Trees	Ornamental Shrubs
Adams	D	191	68	19	93	45	137	2	18	33	6	18	400	51	358	612	769
	F	65	24	5	30	8	33	....	....	4	20	22	1,877	26	140	70	81
Asotin	D	1	....	15	2	2	22	....	80	8	2	6	....	....	....	4	3
	F	99	21	130	33	20	86	3	185	59	160	99	6,050	14	....	105	181
Benton	D	1,000	300	25	257	606	555	....	133	8,000	52	19	200	19	20,001	1,116	970
	F	60	....	....	....	50	75	....	29	12	124	17	3,225	1,221	....	7	42
Chelan	D	16,081	5,805	392	1,813	565	1,570	16	58	332	304	155	542	14	....	356	1,662
	F	316	14	24	34	9	48	5	69	24	20	28	10,085	40	237	247	596
Clallam	D	273	81	88	103	50	188	9	9	13	64	99	931	143	654	181	547
	F	71	15	3	16	6	34	63	12	13	141	51	2,675	508	20	4	74
Clarke	D	70	26	72	10,080	13	29	....	13	14	58	2	....	30	74	6	65
	F	905	426	693	12,766	34	385	16	186	650	89	16	16,240	2,619	28	173	818
Columbia	D	36	14	41	8	7	25	2	2	46	61	19	50	46	143	17	192
	F	25	8	27	14	9	22	....	38	29	10	5	2,400	6	121	94	136
Cowlitz	D	280	393	22	1,362	2	185	8	50	7	25	83	2,300	222	218	31	114
	F	137	36	36	38	6	33	1	6	5	41	....	1,325	67	....	9	83
Douglas	D	527	541	70	39	68	106	1	3	25	111	18	1,348	8	17	125	920
	F	236	34	23	55	35	80	....	12	28	55	52	10,845	42	120	6,708	102
Ferry	D	56	36	12	10	4	20	1	2	718	24	....	600	36	....	4	10
	F	366	84	5	140	6	140	....	5	20	149	99	3,175	48	161	181	122
Franklin	D	108	24	1	11	6	11	2	38	12	18	6	32	24	124	239	205
	F	24	2	5	8	1	4	....	4	9	44	16	72	33	45	62	36
Garfield	D	50	9	11	25	2	36	1	10	320	25	26	318	64	12	14	58
	F	49	5	12	65	4	7	1	5	27	45	28	344	33	164	71	117
Grant	D	4,540	772	171	243	375	363	16	15	358	55	67	12,400	3	531	866	755
	F	127	25	20	32	57	42	3	253	81	14	21	1,150	26	6	153	232
Grays Harbor ..	D	296	96	12	65	....	49	14	1	18	729	175	3,847	1,087	362	21	236
	F	408	79	90	147	11	188	8	13	223	295	182	3,642	68	461	431	1,755
Island	D	1,546	94	69	101	7	141	9	11	44	223	187	3,350	177	283	22	166
	F	405	95	29	133	4	104	3	....	10	45	22	2,850	259	54	7	104
Jefferson	D	....	109	4	202	9	3	3	....	5	36	6	50	161	112	....	48
	F	84	16	16	9	2	20	....	2	....	34	13	1,974	14	19	100	108
King	I	6.047	1,980	251	1,198	102	3,276	163	136	487	2,591	1,528	87,565	2,372	4,120	6,430	17,279
	I	1,108	436	146	321	41	512	23	268	150	363	1,141	17,923	280	1,401	415	2,572
Kitsap	I	799	386	212	494	85	572	29	153	95	272	88	8,874	475	590	60	1,368
	F	36	....	....	5	....	7	....	8	24	42	48	5,475	35	151	17	46

Kittitas	D	661	200	163	176	181	313	7	22	135	312	398	14,572	192	227	510	464
	F	157	80	15	18	11	68	4	2	18	52	89	8,511	33	60	74	696
Klickitat	D	8,000	1,600	80	70	25	300	....	140	59	25	....	....	30	....	20	76
	F	948	258	110	204	24	108	4	37	335	121	196	11,220	79	209	148	231
Lewis	D	84	42	18	66	5	81	....	13	6	15	23	500	75	12	22	664
	F	1,221	272	132	438	18	662	19	277	152	198	221	4,954	1,143	712	262	1,631
Lincoln	D	1,312	326	64	152	106	406	18	7	83	....	22	712	99	987	403	1,358
	F	189	128	329	65	56	62	1	9	41	241	86	10,117	45	387	736	249
Mason	D	112	85	17	44	....	79	....	....	39	82	2	1,400	12	260	6	8
	F	28	....	21	9	....	8	....	....	5	....	....	4,200	2	50	8	71
Okanogan	D	34,439	858	287	208	506	661	19	324	1,016	294	170	2,408	38	50	102	136
	F	6,081	5,148	72	3,222	67	3,777	26	144	358	190	174	17,130	136	343	1,088	426
Pacific	D	182	31	1	52	....	29	4	....	16	155	12	687	215	24	4	278
	F	154	24	6	55	....	18	....	12	3	44	43	3,080	8	60	21	185
Pend Oreille	D	206	87	13	52	1	43	1	1	14	48	16	1,050	57	374	18	36
	F	83	22	2	9	1	8	2	12	12	235	32	640	60	456	120	51
Pierce	D	347	322	35	200	3	174	3	32	257	573	5,949	13,770	1,011	28,949	87	1,841
	F	703	174	85	225	9	513	26	153	91	130	45	9,659	221	228	2,124	1,730
San Juan	D	90	243	11	46	27	69	3	2	....	30	7	100	18	....	312	505
	F	....	....	....	....	....	....	....	....	....	....	....	1,200	....	....	....	....
Skagit	D	1,239	361	86	802	42	657	19	341	125	115	73	4,152	215	89	533	1,778
	F	283	16	14	45	9	63	11	8	33	22	5	4,248	52	133	60	387
Skamania	D	42	8	56	18	6	11	7	....	13	30	6	....	31	....	39	....
	F	18	367	25	36	5	50	1	15	1	52	2	737	12	....	18	68
Snohomish	D	1,561	356	235	318	12	568	54	60	58	478	173	1,219	453	1,619	137	1,921
	F	933	385	71	311	24	924	11	154	68	262	106	17,867	186	540	498	1,481
Spokane	D	5,585	262	220	240	118	1,106	26	45	185	5,080	118	85,860	515	15,500	2,038	10,024
	F	3,518	862	388	1,227	88	1,029	47	211	1,063	862	397	409,295	582	729	950	4,205
Stevens	D	1,403	273	181	191	47	229	11	3	169	124	40	7,825	309	550	71	341
	F	820	156	86	144	85	366	17	40	86	239	115	21,012	505	149	187	452
Thurston	D	152	58	6	29	5	70	4	7	15	1,525	12	1,125	904	1,108	110	75
	F	347	549	23	120	12	709	6	39	40	72	46	4,145	78	82	56	351
Wahkiakum	D	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
	F	68	15	....	15	....	....	15	19	....	22	....	250	23	10	25	155
Walla Walla ...	D	160	30	70	604	12	104	20	32	2,517	45	67	2,500	171	35	677	440
	F	185	18	209	790	29	155	2	75	185	30	98	9,149	77	44	491	1,224
Whatcom	D	231	49	9	45	24	180	7	16	8	36	18	475	270	112	28	134
	F	794	175	23	176	1	272	8	105	56	94	42	4,645	460	890	267	2,288
Whitman	D	678	127	72	238	101	291	12	13	99	233	40	2,874	311	713	889	340
	F	313	155	123	35	67	113	74	51	1,131	148	87	7,368	120	184	558	1,887
Yakima	D	12,766	1,501	1,036	1,423	1,773	781	2	329	149	562	73	900	114	224	551	836
	F	870	78	10	2,221	....	124	1	872	4,049	....	22	9,025	38	....	63	410
Totals.........		123,575	27,605	7,105	44,273	5,595	23,849	889	5,564	24,568	19,088	12,486	859,638	19,120	86,326	33,259	71,466

LIST OF LICENSED NURSERYMEN AND AGENTS.

Licenses Expire July 1, 1917.

Name	*Address*
Beall Greenhouse Co.	Vashon, Wash.
Bon Marche	Seattle, Wash.
J. J. Bonnell	Seattle, Wash.
E. E. Brown	Detroit, Wash.
The Burdett Co.	Seattle, Wash.
A. J. Burt, Florist	Spokane, Wash.
J. J. Butzer	Portland, Ore.
Burien Lake Nursery	Seattle, Wash.
Capital City Nurseries & Greenhouse	Olympia, Wash.
Capitol City Nursery Co., Inc.	Salem, Ore.
Agts: C. H. Dahle	Everett, Wash.
T. B. Warring	Oak Harbor, Wash.
Capital Hill Floral Co.	Seattle, Wash.
Gleason & Carver	Seattle, Wash.
Christopher Nurseries	Christopher, Wash.
Agts: E. H. Gilbert	Chehalis, Wash.
E. H. Goodwin	Tacoma, Wash.
E. M. Jensen	Gig Harbor, Wash.
Geo. McCandlish	Christopher, Wash.
Clarke Bros.	Portland, Ore.
W. H. Davis	Kirkland, Wash.
Henry A. Dreer	Philadelphia, Pa.
Agt: Jas J. Karins	Riverton, N. J.
Jas. Driscoll	Spokane, Wash.
Everett Floral Co.	Everett, Wash.
Evergreen Nursery	Seattle, Wash.
Fremont Floral Co.	Seattle, Wash.
M. Furuya Co., Inc.	Seattle, Wash.
Agts: D. Ariizumi	Seattle, Wash.
K. Kurosaka	Seattle, Wash.
S. Morinaka	Tacoma, Wash.
T. Motosaka	Crystal Springs, Wash.
German Nurseries & Seed House	Beatrice, Nebr.
Otto Heege	Seattle, Wash.
A. A. Hinz	Tacoma, Wash.
Hollywood Gardens, Inc.	Seattle, Wash.
Home Nursery Co.	Richland, Wash.
Agt: C. S. Gibbs	Richland, Wash.
Hoyt Bros. Co.	Spokane, Wash.
D. H. Hulseman	Lakeside, Wash.
Island Nurseries & Fruit Farm	Vashon, Wash.
A. A. Kelley, Nurseryman & Gardener	Spokane, Wash.
R. M. Kellogg Co., Inc.	Three Rivers, Mich.
Lakeview Nursery, E. Bladine, Prop.	Seattle, Wash.
Paul E. Lange	Seattle, Wash.
Latona Floral Company	Seattle, Wash.
Chas. H. Lilly Co.	Seattle, Wash.
Lindley Nurseries	Seattle, Wash.
Madison Park Floral Co.	Seattle, Wash.
Chas. Malmo	Seattle, Wash.
H. W. Manike	Tacoma, Wash.
McCormack Bros.	Tacoma, Wash.
Thos. B. Meehan Co.	Dresher, Pa.
Methow Trading Co., Inc.	Winthrop, Wash.
Milton Nursery Co.	Milton, Ore.
Agts: J. M. Coble	Huntsville, Wash.
O. E. Batchell	Camas, Wash.
Oscar Hill	Walla Walla, Wash.
W. W. Hobbs	Rockford, Wash.
P. E. Nickerson	Prosser, Wash.
Fred I. Moffet	Ellensburg, Wash
Northern Pacific Nursery	Toppenish, Wash.
D. Nishitani	Seattle, Wash.
Oregon Nursery Co., Inc.	Orenco, Ore.
Agts: W. A. Perry	Olympia, Wash.
R. W. Bignell	Wenatchee, Wash.
C. C. Cushman	Tacoma, Wash.
Harry Dean	Seattle, Wash.
Geo. Delaney	Gold Bar, Wash.
J. A. Fuller	Chehalis, Wash.
G. W. Gant	North Yakima, Wash.
C. S. Hill	Oak Point, Wash.

Oregon Nursery Co., Inc.—*Continued*:	
Agts: B. F. Johns	Stevenson, Wash.
J. McClallum	Vancouver, Wash.
John Morrison	Aberdeen, Wash.
J. B. Palmer	Chehalis, Wash.
J. B. Patton	Spokane, Wash.
B. T. Perdue	Brush Prairie, Wash.
D. E. Vernon	Spokane, Wash.
Ornamental & Fruit Nursery Co.	Wapato, Wash.
Agt: C. A. Appleget	North Yakima, Wash.
Overman's Nursery	Spokane, Wash.
Frank E. Payne	Camas, Wash.
J. B. Pilkington	Portland, Oregon
Pioneer Floral Co.	Seattle, Wash.
Portland Seed Co.	Portland, Ore.
Agt: F. E. Davis	Centralia, Wash.
Portland Wholesale Nursery Co., Inc.	Portland, Ore.
O. M. Pruder	Puyallup, Wash.
Puyallup Nursery	Puyallup, Wash.
Quaker Nurseries	Salem, Ore.
Agt: J. W. Ray	Pe Ell, Wash.
E. Riegel & Cooper, W. I.	Vancouver, Wash.
Rosaia Bros.	Seattle, Wash.
Rosencraft Fruit Farm	Sumner, Wash.
Rose Valley Nursery	Portland, Ore.
Routledge Seed & Floral Co., Inc.	Portland, Ore.
Russelville Nurseries, Inc.	Portland, Ore.
Agts: Geo. Hale	Portland, Ore.
F. L. Whitehead	Crawford, Wash.
Salem Nursery Co.	Salem, Ore.
Agts: J. E. Barnett	Napavine, Wash.
H. L. Clark	Auburn, Wash.
J. F. Honeyford	Suquamish, Wash.
N. Van Valkenburg	Kirkland, Wash.
J. H. Wylie	Tacoma, Wash.
Sandved Nursery	Seattle, Wash.
Seaview Park Greenhouse & Nursery	Seattle, Wash.
Seattle Floral Co.	Seattle, Wash.
Joel Shomaker	Nellita, Wash.
Silva-Bergtholdt Co., Inc.	New Castle, Calif.
Stark Bros. Nurseries & Orchard Co., Inc.	Louisiana, Mo.
C. D. Stephens	North Yakima, Wash.
Storrs & Harrison Co., Inc.	Painesville, Ohio
C. P. Tate	Grandview, Wash.
Toppenish Nursery Co.	Toppenish, Wash.
Agt: C. V. Abrahamson	Everett, Wash.
Garrison Turner	Seattle, Wash.
University Nursery & Greenhouse	Seattle, Wash
The Villa Nursery	Portland, Ore.
Agt: C. V. Taggart	North Portland, Ore.
Chas. H. Waight	Seattle, Wash.
Washington Nursery Co., Inc.	Toppenish, Wash.
Agts: W. H. Ball	Palouse, Wash.
W. F. Barth	Anacortes, Wash.
Samuel G. Hall	Spokane, Wash.
A. M. Johnson	Shelton, Wash.
D. J. Kalkwarf	Ritzville, Wash.
Mike Linder	Ellensburg, Wash.
J. W. Petrain	Vancouver, Wash.
J. M. Titus	Bellingham, Wash.
G. W. Thomas	Dayton, Wash.
Henry Woehr	Ritzville, Wash.
Wenatchee Home Nursery	Wenatchee, Wash.
Alton R. Wheelock & Herbert E. Congdon	North Collins, N. Y.
White Salmon Nursery	White Salmon, Wash.
S. P. Whitney	Seattle, Wash.
F. A. Whitney	Seattle, Wash.
O. J. Wingren	La Conner, Wash.
F. W. Woolworth & Co.	Tacoma, Wash.
Yakima Valley Nursery Co., Inc.	Toppenish, Wash.
Agts: Paul Blanchet	Enumclaw, Wash.
Mark E. Carroll	Buckley, Wash.
Young & Lester	Walla Walla, Wash.
W. D. Young	Kennewick, Wash.
G. I. Wibra	Chehalis, Wash.

REPORT ON FOODS, FEEDS, FERTILIZERS, DRUGS, OILS AND BAKERY INSPECTION

In compliance with the law, I am submitting herewith the second report of the Fourth Division of the State Department of Agriculture, covering the period from August 1, 1914, to and including July 31, 1916, the work of this division embracing foods, feeds, fertilizers, drugs, oils, and bakery inspection.

In the administration of this division, I have endeavored to conduct the work in harmony with the policy of the state administration; that is, to accomplish as much work as possible with the least possible expense.

During the period covered in this report, there were employed in food, feed, fertilizer, and bakery inspection work but one inspector all of the time, and three a part of the time, in addition to myself, and but one drug inspector for the period from August 15, 1914. In oil inspection, there has been but two inspectors all the time, and four a part of the time. The duties of some of the food inspectors and the drug inspector carried them to practically every town and city of any size in the state and covered the inspection of foods and drugs at the factory and in the wholesale and retail establishments, as well as restaurants, hotels, hospitals, doctors' offices, and state institutions.

Inspection was given to grocery stores, meat markets, cold storage plants and all places where food and drug products are offered for sale or stored. The total number of food and drug inspections made during the biennium was 16,604, subdivided as follows: Groceries, 5,088; meat markets, 1,886; butter stores, 1,012; fish stalls, 213; fruit stands, 267; miscellaneous stores and places, 3,435; bakeries, 653; restaurants, 142; vegetable stands, 178; warehouses, 39; cold storage plants, 49; slaughter houses, 98; factories, 26; piers, 24; confectioneries, 83; wholesale groceries, 54; commission houses, 6; drug stores, 2,076; hospitals, 100; soft drink stands, 634; doctors' offices, 500; barber shops, 23; peddlers' stock, 2; state institutions, 16.

In the course of the foregoing inspections, 90,101 packages of foods and drugs, 286,257 pounds of bulk goods, and 15,353 dozen eggs, were found to violate the law and to be unfit for use and were condemned and destroyed.

Reports of these various inspections are on file in the Department.

We also gathered and submitted for analyses 675 samples of foods and drugs, and 132 samples of stock feeds, suspected of violating the pure food and drug law, and 205 samples of fertilizers.

In addition to our regular inspection work, we have conducted an educational exhibit and campaign covering a period of five weeks at four fairs and at the Women's State Federation convention, at Spokane. I feel that this feature of our work has had proportionately as wholesome and beneficial an effect in preventing the marketing of unwholesome food as have the prosecutions brought and the penalties enforced under the pure food law.

In addition to the above educational work, the undersigned addressed the National Convention of Retail Grocers at San Francisco, in May, 1915; the National Convention of Food Control Officials, in August, 1915; the State Retail Grocers' convention at Tacoma, in October of the same year; the State Federation of Women's Clubs, in June, 1915; the Kalama Women's Club, the Wenatchee Women's Club, the Knights of Columbus at Seattle, a meeting of feed manufacturers at Seattle, and numerous retail grocers' and other organization meetings in different parts of the state. These addresses were designed to make the work of this division of the most immediate service to the dealers and consumers in the state and to procure the widest possible public co-operation in the work.

During the biennium the undersigned prepared and issued a bulletin on food and food values, two bulletins relating to stock feeds, and one bulletin covering sanitary regulations, besides codifying and revising the laws and regulations relating to this division.

PROSECUTIONS.

Thirty-two prosecutions for violations of the pure food and drug law were instituted by this division during the above period. They resulted in twenty-six convictions, two dismissals, one because the offender went into bankruptcy and one by the prosecutor without the consent of the division, and two acquittals. Two cases are still pending. The aggregate fines and forfeitures were $1,590.00, in addition to the value of the foods and drugs condemned and destroyed.

It is the policy of the division to be very careful in the institution of prosecutions. That accounts for our almost uniform success in securing convictions. It is also our policy, when prosecutions are begun and we are satisfied the offense has been wilful and deliberate, to prosecute vigorously and without compromise. I have personally attended and given direction to practically all prosecutions. The division believes that no law is important except as it is enforced.

An unfortunate error on the part of a deputy prosecutor caused considerable trouble. The deputy filed a case in the name of the commissioner of agriculture instead of in the name of the State of Washington. That trouble has been satisfactorily adjusted. In order to prevent a recurrence of such a mistake, we have since drafted and printed in the laws and regulations for this division proper forms of complaints for the guidance of inspectors and prosecutors.

VINEGAR.

During the biennium, we have had some trouble with the enforcement of the regulations relating to vinegar. The state law relating to vinegar conflicts with the federal ruling on the same subject. While the vinegar situation in the state is not ideal, it will compare favorably with that in any state in the Union.

I might say in passing, that I discussed the vinegar situation with many food control officials at the National Food Commissioners' convention at Berkeley, Cal., and all of them agreed that while it was one of the most vexatious problems they had to meet, the keenness of competition between manufacturers was the greatest source of trouble, and that since the life and health of consumers was not involved, the purely commercial nature of the problem robbed it of all dangers to the public. The products of all the large manufacturers of vinegar doing business in the state have been sampled numerous times within the period covered by this report. The territory to inspect is so large and the force of inspectors so small, it has been impossible to give more attention to this item without seriously neglecting items of much more importance and on which the life and health of the public largely depends. We are keeping as close supervision of this matter as our force will permit. Vinegar prosecutions will be brought in every instance where the chemists are prepared to fortify their analysis of adulteration by expert testimony.

CONCENTRATED STOCK FOOD.

The supreme court in a decision handed down in February, 1915, declared the concentrated feed statute unconstitutional because of a discriminatory clause in the act. Realizing the importance of this measure to consumers of stock feeds, I sought to have the last legislature remedy the defect by an amendment. The agricultural committee of the house made a favorable report on the amendment, but the rules committee chloroformed the bill.

After the adjournment of the legislature, I took the matter up with the attorney general's office and was advised that I could afford some relief by enforcing purity of stock feeds under the general pure food law. I issued a general bulletin on March 22, 1915, notifying manufacturers and consumers of stock feeds that the division would enforce the regulations on this subject under the food law.

The manufacturers and dealers generally have shown a very commendable disposition to comply with the regulations contained in that bulletin. We have since then been submitting feed samples for analysis to the state chemists. There has been a steady and pronounced improvement in the stock feeds now being sold.

The constantly increasing price of all valuable materials that enter into the manufacture of stock feeds has brought into use many by-products that were formerly wasted or which were used in their crude state. I recognize their necessity and that their legitimate use is right and proper, but there does not now exist nor should there ever be any necessity for their substitution for the original and nutritious products unless the purchaser has reliable information of their true character. The only fair and honest way to give this information is to have it plainly marked and described on the label or package.

A few manufacturers of stock feeds resort to the very questionable practice of using misleading terms for the purpose of marketing their by-products and adopt such legends as "dairy feed," "dairy chop," "oat feed," "oat clippings," and "oat by-product," to describe oat hulls, rice hulls, cottonseed hulls, ground corncobs, ground alfalfa, weed seeds, grain screenings, chaff, etc. Then again we find a few manufacturers resorting to the very questionable practice of using very small quantities of some desirable feeding stuffs in their mixtures in order that they may declare their presence on their labels, sacks and invoices, for the purpose of inducing patrons to purchase the feed. This practice is bad policy and is deplored and condemned by reputable manufacturers. Such practices are a violation of the spirit of the law and border closely on a violation of the letter of the law and are bound to hasten the day for the requirement on the label and sacks of the percentage of each and every ingredient in mixed feeds.

While this report is being prepared, I have asked for a meeting of manufacturers, their representatives and dealers in stock feeds, with our state chemists and myself to discuss these matters and lay before them the urgent necessity for co-operation in eliminating these abuses. In any event, I shall urge as a correction, an amendment to the law.

FERTILIZERS.

During the biennium, we gathered and submitted for analysis 207 samples of fertilizers and collected fees for the same amounting to $1,612.00. The law authorizes the publication of the results of the analysis made. Failure of the legislature to provide the necessary printing fund is the reason that no such publication has been made.

Notwithstanding no publication of the analyses has been made, it is not only just to the division but also to the manufacturers and patrons of fertilizers to state that with few exceptions the spirit and letter of the law are being complied with and only in a few instances were even technical violations discovered. Letters calling attention to the same were promptly acknowledged, with the assurance that the deficiencies would be remedied at once. The patrons of fertilizers suffered a loss in the failure to provide for a bulletin, as they were deprived of valuable information from the use of the same. The scarcity and high price of potash has driven out many brands of mixed fertilizers.

DRUGS.

The drug inspector during the biennium has made 2,076 careful inspections of drug stores, hospitals, doctors' offices, and soft drink stands. His personal report together with brief tabulated reports will be found in connection with the division reports and any extended notice here would be only duplicating the same.

OILS.

The report of the chief oil inspector will be found among the statistical reports with his comments. The report is quite complete and demonstrates that the inspectors have been diligent in protecting the state's interests. The inspector's comments give a brief history of the action brought by the Standard Oil Company attacking the constitutionality of the law pertaining to the collection of fees for oil inspection. The case is now pending on appeal in the state supreme court.

BAKERIES.

During the period covered by this report there were 647 thorough bakery inspections made. These inspections covered condition and quality of materials used, cleanliness and health of employees, and sanitary conditions of all buildings, utensils, walls, floors, sinks, storerooms, and toilets. No certificates were recommended or issued unless conditions at the time justified them. Whenever reinspections were made and they showed the conditions were below the standard demanded, if a certificate had been issued, its surrender was demanded and obtained. While this penalty secured some good results, I am free to admit there were some who paid no attention to its loss. There are some violators of sanitary conditions that can only be reached through the enactment and vigorous enforcement of a comprehensive and effective sanitary statute. We have no such statute now and our power to enforce adequate sanitary regulations is thereby seriously crippled.

STATE INSTITUTIONS.

In connection with our regular duties I have sought to personally inspect all of our state institutions once a year. These inspections disclosed such a commendable condition not only as to food supplies but as to cleanliness also that I was prompted to send a report covering this subject to the State Board of Control. The report was as follows:

OLYMPIA, WASHINGTON, Jan. 16, 1915.

To the Honorable Members of the State Board of Control, Capitol Building,

GENTLEMEN: Feeling that you are deeply interested in the condition of the food supply of the various state institutions, this report is respectfully submitted for your information and consideration.

During the month of December, 1914, and the early part of this month, as occasion permitted in connection with our regular work, we made a general and careful inspection of the food supplies, together with their sanitary surroundings and preparation, of the following institutions:—Northern Hospital for Insane at Sedro Woolley; Reformatory at Monroe; Washington Veterans' Home at Port Orchard; State Soldiers' Home at Orting; Western Hospital for Insane at Fort Steilacoom; Eastern Hospital for Insane at Medical Lake; State School for Deaf, and State School for Blind at Vancouver; State Training School at Chehalis; State School for Girls at Grand Mound, and State Penitentiary at Walla Walla. The food supplies at all of these institutions were in excellent condition as to care and quality, with the exception of some canned pears at the State School for Deaf that had started to spoil, a small quantity of lard at the State Soldiers' Home at Orting, which upon analysis, proved to be below standard, and a small bin of barley at the Reformatory, which upon examination, proved to be infested with weevils.

We also made a careful examination as to the cleanliness of all cupboards, bins, store rooms, refrigerators, dishwashing sinks, dairy and bakery utensils and all implements used in the preparation and serving of food. We made a careful sanitary survey of the slaughter houses (where there were any), dairy barns, poultry buildings and runs, piggeries and yards.

With the exception of a little carelessness in the cleaning of some butcher tools, a bread mixer and some baking tins, to which the attention of the superintendent or commissary accompanying us at the time was called, we found the conditions as to cleanliness far above the average encountered in our daily inspection work of private institutions.

The piggeries at Medical Lake, Steilacoom, Walla Walla and Chehalis are ideal, and while some class them as pig pens, they are so modern that they are entitled to be classed as pig parks, and the porkers look so clean and wholesome that one of our inspection force said they looked good enough to eat with the bristles on.

The dairy barns at Medical Lake, Steilacoom, Walla Walla and Chehalis are modern and kept clean and in fine condition. The dairy barn and piggery at Sedro Woolley, while kept as clean as their old and tumbled-down condition will permit, could not be passed as sanitary. New farm buildings are sadly needed there. The dairy barn at Monroe is under the horse barn, and while the dairy part of the barn is concrete and modern in other particulars, there are some sources of danger that will increase, for the reason that the floor of the horse barn above is made of wood. There is grave danger of seepage. I would suggest coating the wood with some impermeable material.

Special sanitary precautions should be exercised not only in the production but care of milk, as it is one of the most active conveyors of disease among our food products.

We carefully enquired about the physical condition of the various food animals and were pleased to be assured that with two exceptions, the animals in which were under careful observation and care, they were all in a healthful condition.

While the slaughter house at Steilacoom is kept in first class condition, the hide and tankage rooms should be separated from the killing room by partition walls and outside ventilation provided.

We were received courteously and every possible facility was shown us in making our inspections, and our advice was not only welcomed but actively sought on many questions of sanitation and care of foods by the various officers who accompanied us in our inspections.

In a few instances we were informed by officials that, had they known we were coming, they would have been ready for us. We assured them our policy was to come unheralded and that we preferred to meet them in their every day clothes.

In conclusion I believe that I would be remiss in my duty if I did not take this opportunity officially and personally to congratulate you and through you the officials who are responsible for the excellent conditions existing in connection with the food supplies of our state institutions. It demonstrates such a commendable, conscientious and humanitarian discharge of duty that it makes us feel proud of our state and the present administration of its public institutions.

The general conditions are so far superior to what we frequently discover among public purveyors and caterers of food in our daily rounds that they are specially worthy of mention.

Yours very truly,

J. J. HIGGINS

SANITATION.

Notwithstanding the fact that we have been seriously handicapped through lack of a proper statute, we have invariably given close attention to and sought to promote sanitation and cleanliness in all places inspected. Realizing the importance to the people of the state of clean as well as pure food, we have endeavored to make the best use of the force and statutes at our command.

FAILURE TO SECURE LEGISLATION.

I very sincerely regret to inform you that none of the four measures submitted by this division to the last legislature was favorably acted upon. The two bills submitted to the senate received favorable action by that body. All the bills were favorably reported upon by the house committees to which they were referred, only to be finally chloroformed by the house rules committee.

INSPECTORS.

While our force of food and drug inspectors has been inadequate to cover all the ground, by using deputies in other branches of the work to assist in food and drug inspection and by devoting considerable time myself to this work, we have managed to cover much of the necessary ground, but anything like reasonable service to the state demands at least one additional food inspector.

While on this subject, I desire to bring to your attention the faithful and efficient services of the inspectors. They have been, in most instances, capable of determining by their own examination of the product whether it complied with the requirements of the law. Therefore but a relatively small percentage of the foods and drugs condemned and destroyed were sent to the state chemists for analysis. A casual perusal of the tabulated statements of the work done but inadequately conveys a just conception of their actual duties.

Their principal business is looking for trouble, and naturally, as the reports show, they found quite a lot of it. The inspectors, to be successful, must have the ability to thoroughly familiarize themselves with the actual conditions as they exist and explain the law's requirements. They must be firm but courteous, and when possible gain and maintain the respect of the inspected party.

It is a great pleasure to me to be able to commend not only the faithful and intelligent efforts of my inspection force, but also to recognize the loyal, helpful, and expert work of our state chemists. I feel I would be remiss in my duty if I did not publicly express my grateful acknowledgment not only for the help they have given me in conscientious discharge of their duties, but as well for their intelligent initiative in matters having for their object the promotion of the work of the division for the greater benefit of the people.

KILLED WHILE IN DISCHARGE OF STATE DUTIES.

It is with deep and sincere regret that I mention the loss to the division, as well as to the state, of Profressor Elton Fulmer, one of the state chemists, and I. J. Minnick, an inspector, who were both killed in a railroad collision at Cheney, Wash., on February 20, 1916, while returning from the discharge of their duties in conection with a pure food prosecution at Walla Walla, the day previous.

Professor Fulmer had been actively and continuously connected with the pure food work of the state from its beginning in 1894 until he met his untimely end. To his foresight and initiative can be credited many of the improvements in pure food regulation, not only in the state but in the United States as well. He was generally recognized as one of the most capable and able instructors and chemists in the country, and as a man of strong convictions and rugged and unflinching honesty. His untimely end was generally regretted and mourned.

Mr. Minnick was connected with the State Department of Agriculture from its organization, and had been with this division less than a year at the time of his death. He was a man of unquestionable integrity and a faithful and capable inspector. His uniform courtesy and genial manners made friends of all with whom he came in contact.

NEEDED LEGISLATION.

In calling attention to needed legislation, I will not attempt to give a detailed outline of the legislative measures or an elaborate explanation of their need. I will briefly name the measures and make a short statement of what appears from my experience to be the principal necessity for their enactment.

AMENDMENTS TO FOOD AND DRUG ACT.

The present law is so general in most of its requirements that it is impossible to bring about some needed reforms. It should be so amended as to give the enforcing officers power to lay down rules and regulations establishing certain standards for various products that need standardizing. Our state supreme court has ruled that where such authority is given by the legislature it is legal and binding. The weights and measures clause of the food law should be amended to conform with the federal act. The drug section should be amended so as to include the Shirley amendment of the national food and drug act, which reads as follows:

"An article shall be deemed to be misbranded, in the case of drugs, if its package or label shall bear or contain any statement, design or device regarding the curative or therapeutic effect of such article or any of the ingredients or substances contained therein, which is false or fraudulent." Our present food and drug law was a practical duplicate of the federal law at the time of its adoption, and these amendments are in line with further uniformity.

GENERAL SANITATION.

One of the state's most imperative needs is the enactment of a comprehensive sanitary law. Cleanliness is the foundation principle for the safeguarding of life and health. The battle for pure food has made great progress in the past twenty-five years, but its teammate, cleanliness, has been sadly neglected. A great many of our foods that are chemically pure are sanitarily unfit to eat. In brief the best and purest foods may become and often do become so contaminated by filthy surroundings and handling that they are often more dangerous than the vilest adulterations that prospered in the balmy days prior to pure food legislation. The sanitary laws of Indiana, Colorado, Illinois, Kansas and Iowa are suggested and recommended as suitable models for a Washington statute. The enforcement of a sanitary law can be conducted by the food and drug inspectors without any substantial increase in expense.

SLAUGHTER HOUSES.

There is serious and urgent need of a law giving the State Department of Agriculture supervision over slaughter houses in this state. This measure should empower the Department to lay down strict sanitary regulations and be enforced under a license system that would produce sufficient revenue to carry the expense of its enforcement. Present conditions in many of the slaughter houses in the small communities are vile and insanitary beyond description. In many instances the houses are located on the banks of small streams or creeks. Frequently the offal is thrown in these streams and then water for washing the meat is dipped from this foul source. Practically the only washing meat gets it receives at the slaughter houses. Cattle and hogs suffering from various stages of tuberculosis are not infrequently slaughtered for public consumption at these places. Food animals suffering from all manner of diseases are slaughtered and shipped to the towns and to various cities that are not protected by local inspection laws. The floors, walls, tables, and tools used at these slaughter houses show but little evidence of the use of water. The yards, pens, and runways are seldom cleaned. Blood and manure are caked on the walls and floors. One butcher was asked what they did with sick and injured animals. He smiled and answered, "What do they all do with them?"

The federal authorities thoroughly inspect all animals slaughtered for interstate business as well as the surroundings and slaughter houses. If the government deems such work a necessary health precaution for interstate business, why should our local and rural slaughter houses be allowed to run as they see fit?

REGULATING THE SALE OF EGGS.

The last legislature passed an act classifying and regulating the labeling and marking of eggs. The statute upon legal test has been found faulty in many particulars. California and Oregon legislatures passed statutes of similar nature and the supreme courts in those states have declared those statutes unconstitutional. I have caused several arrests under our state statute and two of the cases are now pending on appeal. There is no question that legislation regulating the sale of eggs is desirable and necessary. We will be pleased to give the friends of this class of legislation the benefit of our experience in remedying the defects in the present statute.

COLD STORAGE.

There is great need of regulation of cold storage. During the biennium we have found large quantities of cold storage products that had been held for upwards of two years and when discovered were in an absolutely dangerous condition. The owners were prosecuted and fined.

Many states have in successful operation statutes relating to cold storage. The effect of those statutes is often to induce storage plant owners to hold such products close to the time limit and then ship them to states not similarly protected. The question of proper cold storage control is absorbing the attention of food officials and the public today as never before. Cold storage is an economic necessity. It is not the use but the abuse of cold storage that legislation should seek to correct. There is a limitation to the life and wholesomeness of cold storage food. Speculation in food supplies is being permitted in many instances to overwork the economic value of cold storage. This measure should be enforced under a license system.

In the matter of needed legislation I have sought to recommend only such matters as my experience has taught me to believe absolutely necessary, and that combine two essentials, namely: the greatest good to the greatest number, and the least possible expense in their enforcement. I earnestly urge their consideration and adoption. I have now in course of preparation bills covering each of them.

COMPENSATION FOR CHEMISTS.

In justice to the state chemists they should receive some compensation for their state food and drug analytical duties. The work frequently requires their attention on Saturdays and during vacation periods, as well as burden of irregular hours when rendering services as expert witnesses.

DIVISION BULLETINS.

During the biennium we have issued a number of bulletins relating to foods and feeds. This is by far the most economical method of bringing to the manufacturers, merchants, and the public such information as is a necessary guide and assistance in the enforcement of the various acts. The reason more work of that nature has not been done is the lack of a sufficient printing fund.

BRIEF STATISTICAL REPORTS.

On account of the limited printing fund, only brief statistical reports of the various acts enforced under this division will accompany this report. The detailed inspection reports are on file in the Department and can be consulted by the public at any time.

Very respectfully submitted,

J. J. HIGGINS,

Ass't. Commissioner in Charge of the Fourth Division.

FOODS CONDEMNED AND DESTROYED.

Canned Goods.	Cans
Asparagus	12
Beans	91
Salmon	66,634
Halibut	13
Crab Meat	54
Herring	86
Sardines	70
Clams	25
Fish, miscellaneous kinds	111
Meats	912
Poultry	153
Soup	34
Fruit	2,304
Sauer Kraut	56
Pumpkin	44
Clam Nectar	247
Condensed milk	194
Total	71,040

Bottle Goods.	Bottles
Catsup	1,523
Pickles	659
Olives	411
Salad dressing	291
Distilled vinegar	84
Horse radish	64
Jams	8
Extracts	406
Pepper sauce	28
Worcester sauce	27
Chili sauce	2
Mustard	230
Peanut butter	42
Total	3,775

Package Goods.	Packages
Breakfast cereals	179
Miscellaneous food packages	9,235
Dried currants	239
Baking powder	356
Total	10,009

Bulk Products.	Pounds
Dry codfish	16,800
Brick codfish	278
Frozen Salmon	14,500
Frozen Halibut	8,350
Salt salmon	1,220
Assorted Frozen fish	1,100
Frozen Finnan haddie	630
Salt herring	600
Boiled crabs	653
Fresh beef, liver and sausage	2,785
Salt pork	90
Ham and bacon	86¾
Lard	22
Dressed turkeys	2,608
Dressed chickens	7,659
Squabs	840
Dressed ducks	60
Corn starch	2,000
Soda	200
Shredded cocoanut	700
Walnuts	2,073
Peanuts	222,940
Total	286,194¾

Eggs.	Dozen
Cold storage and Chinese eggs	15,353

FOOD SAMPLES ANALYZED.

Kind	*Findings*		*Total*
Alcohol (Grain)	2	Legal	2
Alcohol (Wood)	1	Illegal	1
Baking powder	22	Legal	
Baking powder	2	Illegal	24
Catsup	6	Legal	
Catsup	5	Illegal	11
Candy	3	Legal	3
Cider	2	Legal	2
Clams	1	Legal	
Clams	1	Illegal	2
Cocoa	15	Legal	15
Chocolate (ground)	7	Legal	7
Codfish	2	Legal	
Codfish	2	Illegal	4
Crab	7	Illegal	7
Dressing (salad)	4	Legal	
Dressing	1	Illegal	
Dressing	1	Doubtful	6
Extracts	54	Legal	
Extracts	18	Illegal	
Extracts	3	Doubtful	75
Eggs	5	Legal	
Eggs	5	Illegal	10
Flour	3	Legal	
Flour	22	Illegal	25
Fruitene	1	Legal	1
Grapefruit	1	Legal	
Grapefruit	4	Illegal	5
Hamburger	2	Legal	
Hamburger	2	Illegal	4
Honey	18	Legal	18
Horseradish	1	Legal	1
Ice cream powder	1	Legal	1
Jelly	58	Legal	
Jelly	2	Illegal	60
Jam	2	Legal	
Jam	3	Illegal	5
Lard	3	Legal	
Lard	1	Illegal	
Lard	1	Doubtful	5
Meat (fresh)	1	Legal	
Meat (mince)	1	Illegal	2
Chickens (cold storage)	5	Illegal	5
Turkeys (cold storage)	4	Illegal	4
Squab (cold storage)	2	Illegal	2
Milk (condensed)	11	Legal	
Milk (condensed)	12	Below standard	23
Oranges	1	Legal	1
Olive oil	14	Legal	14
Oil (salad)	1	Illegal	1
Peanuts	1	Illegal	1
Pickles (dill)	1	Legal	1
Preserves	1	Legal	
Preserves	2	Doubtful	3
Rice	1	Illegal	1
Salmon	20	Legal	
Salmon	46	Illegal	
Salmon	38	Doubtful	104
Sausage	1	Legal	1
Sauces (condiment)	2	Legal	2
Soups	2	Legal	2
Syrup	23	Legal	
Syrup	6	Illegal	29
Sugar (maple)	2	Legal	2
Vinegar	49	Legal	
Vinegar	41	Doubtful	
Vinegar	11	Illegal	101
Water (mineral)	1	Legal	1
Walnuts	3	Legal	
Walnuts	1	Illegal	4
Whiskey	2	Legal	2
Wine (Port)	2	Legal	2
		Total	602

STOCK FEEDS ANALYZED.

Stock feeds	85	Legal	
Stock feeds	35	Illegal	
Stock feeds	3	Legal unofficial	
Stock feeds	6	Misbranded	
Stock feeds	3	Doubtful	132

FOOD PROSECUTIONS.

No. 570—State of Washington vs. Cudahy Packing Co. Charge: Having in possession adulterated poultry. Fined $250 and costs. Paid.

No. 571—State of Washington vs. Western Meat & Fish Co. Charge: Having in possession adulterated poultry. Plead guilty. Fined $100 and costs. Paid.

No. 572—State of Washington vs. Morris & Company. Charge: Having in possession adulterated poultry. Fined $250 and costs. Paid.

No. 2507—State of Washington vs. General Market Co. Charge: Having in possession adulterated food. Canned salmon. Fined $100 and costs. Paid.

No. 2508—State of Washington vs. General Market Co. Charge: Misbranding food products. Canned salmon. Fined $50 and costs. Paid.

No. 2506—State of Washington vs. Christian Querin. Charge: Selling adulterated food. Canned salmon. Fined $250 and costs, appealed and settled in Superior Court. Fine Paid.

No. 2506—State of Washington vs. James Harris. Charge: Selling adulterated food. Canned salmon. Fined $100 without cost. Paid.

No. ....—State of Washington vs. Everybody's Market. Charge: Selling misbranded goods. Fined $10 and costs. Paid.

No. 2856—State of Washington vs. Oscar Lucks. Charge: Selling adulterated food. Fined $50 and costs. Paid.

No. 2857—State of Washington vs. Chas. W. Treve. Charge: Selling misbranded butter. Fined $25 without costs. Paid.

No. 2858—State of Washington vs. Johnson, Lieber & Van Bokkelen. Charge: Selling adulterated food. Fined $50 and costs. Paid.

No. 2987.—State of Washington vs. Rhodes Brothers. Charge: Selling misbranded extracts. Plead guilty. Fined $25 and costs. Paid.

No. 120—State of Washington vs. L. B. Meredith. Charge: Selling misbranded butter. Filed bond in the sum of $25 and forfeited same.

No. 121—State of Washington vs. H. E. Dahlin. Charge: Selling misbranded butter. Filed bond in the sum of $25 and forfeited same.

No. 23—State of Washington vs. E. Rassmussen. Charge: Selling adulterated food. Fined $25 and costs. Paid.

No. 151—State of Washington vs. Walter Burton. Charge: Selling adulterated food. Fined $25 and costs. Paid.

No. ....—State of Washington vs. Wm. Leo, Jr., Charge: Selling adulterated vinegar. Fined $25 and costs. Paid.

No. ....—State of Washington vs. Tacoma Meat Co. Charge: Selling misbranded lard. Case dismissed by prosecutor because defendants were in bankruptcy.

No. ....—State of Washington vs. C. C. Irwin. Charge: Selling misbranded lard. Acquitted.

No. ....—State of Washington vs. Pacific Oil Mills Co. Charge: Selling adulterated peanuts. Case pending in Superior Court.

No. 3337—State of Washington vs. J. P. Marshall. Charge: Selling adulterated vinegar. Plead guilty. Fined $25 without costs. Paid.

No. 3496—State of Washington vs. Geo. O. Brehm. Charge: Selling storage eggs without properly branding same. Fined $5 and costs. Paid.

No. 3495—State of Washington vs. John Layton & Co., and Geo. L. Jones. Charge: Selling Chinese eggs without properly branding same. Case pending on appeal.

No. 4116—State of Washington vs. Hemphill Bros. Charge: Having adulterated food in possession. Plead guilty. Fined $50 without costs. Case pending on appeal.

No. 4151—State of Washington vs. McRae & Branigan. Charge: Having adulterated food in possession. Plead guilty. Fined $25 without costs. Paid.

No. 4152—State of Washington vs. Augustine & Kyer. Charge: Having adulterated food in possession. Plead guilty. Fined $25.

No. ....—State of Washington vs. Schallinger Produce Co. Charge: Selling adulterated food. Court ordered same destroyed.

No. ....—State of Washington vs. Yakima Products Co. Charge: Offering for sale adulterated vinegar. Acquitted.

No. ....—State of Washington vs. Harrah Bros. Charge: Having adulterated food in possession. Plead guilty. Fined $25.

DRUG PROSECUTIONS.

No. 4132—State of Washington vs. Fred Heipp. Charge: Selling misbranded hair tonic. Case dismissed by Prosecutor Lundin without state's approval.

No. 3661. State of Washington vs. G. H. Guy. Charge: Selling misbranded salad oil. Plead guilty. Fined $25 without costs. Paid.

No. ....—State of Washington vs. Edwin Clark. Charge: Selling misbranded cough syrup. Fined $25 and costs. Paid.

BAKERY INSPECTION.

Bakeries Inspected:

Graded as very good	19
Graded as good	226
Graded as fair	181
Graded as poor	68
Reinspections	159
Total inspections	653

Certificates issued	245
Certificates withheld because shops do not meet requirements	249
Total	494
Number of towns visited on inspection trips	119

Towns visited and inspections made in each town:

BAKERY INSPECTIONS.

Aberdeen	7	Chehalis	7
Auburn	5	Cheney	2
Arlington	2	Centralia	11
Anacortes	5	Chewelah	2
Bellingham	22	Colville	2
Burlington	3	Colfax	2
Bremerton	7	Concrete	1
Buckley	2	Castle Rock	2
Bismarck	2	Camas	4
Blaine	2	Cle Elum	3
Black Diamond	2	Carson	1
Bothell	1	Cathlamet	1
Cashmere	1	Chelan	2

Clear Lake	1
Dayton	2
Davenport	2
Everett	14
Endicott	1
Ephrata	1
Ellensburg	2
Elma	2
Enumclaw	2
Edmonds	2
Ferndale	2
Fern Hill	1
Garfield	1
Granite Falls	1
Gold Bar	1
Goldendale	2
Hillyard	1
Hoquiam	4
Hartford	1
Ilwaco	2
Issaquah	2
Index	1
Kalama	1
Kelso	3
Kennewick	1
Kent	1
Kapowsin	1
La Conner	2
Leavenworth	1
Lynden	1
Mabton	1
Marcus	1
Marysville	1
Monroe	1
Montesano	1
Mount Vernon	7
Newport	1
North Yakima	4
Oakesdale	2
Odessa	1
Okanogan	1
Olympia	5
Oroville	1
Orting	1
Palouse	3
Parkland	1
Pasco	1
Port Angeles	4
Port Orchard	2
Port Townsend	4
Prosser	2
Pullman	2
Puyallup	4
Raymond	2
Renton	4
Ritzville	1
Rosalia	1
Roslyn	2
Seattle	148
Seaview	1
Sedro Woolley	4
Sequim	3
Shelton	1
Snohomish	3
South Bend	2
Spangle	1
Sprague	1
Spokane	35
Stanwood	2
Stevenson	2
St. Helens	1
Sultan	1
Sumner	4
Sumas	1
Sunnyside	1
Tacoma	62
Tekoa	1
Tenino	1
Toledo	1
Tolt	1
Toppenish	2
Vader	1
Valley	1
Vancouver	2
Waitsburg	2
Walla Walla	4
Washougal	2
Washtucna	1
Wenatchee	2
White Salmon	2
Wilkeson	2
Winlock	3
Yacolt	1
Total	522

Many shops of the type of "home bakeries" which were too small to be classed as regular bake shops were also inspected by this division.

In practically all of the shops where needed improvements were ordered made, a reinspection has revealed a marked improvement in the shop conditions.

The bakery inspector also acted in the capacity of assistant food inspector, and in addition to the 522 bake shops inspected, has inspected 4,582 food distributing establishments of various kinds other than bakeries.

DRUGS.

Official Samples Taken and Analyzed.

Kind	*No.*	*Findings*
Alcohol	1	Legal
Corn remedy	1	Illegal
Colic cure	1	Legal
Spirits camphor	1	Legal
Tinc. Iodine	12	Legal
Tinc. Iodine	8	Illegal
Extract lemon	1	Legal

Kind	*No.*	*Findings*
Dyspepsia remedies	1	Legal
Essence peppermint	1	Legal
Spirits nitre	2	Legal
Spirits nitre	1	Illegal
Headache remedy	4	Legal
Headache remedy	1	Illegal
Cough remedies	6	Legal
Cough remedies	1	Illegal
Cold remedies	1	Legal
Carbolic acid	2	Legal
Sweet oil	1	Legal
Salad oil	1	Illegal
Catarrh cure	1	Legal
Oil wintergreen	1	Legal
Peroxide hydrogen	2	Legal
Hair tonic	1	Illegal
Soda water	3	Illegal
Total	55	

DRUGS.

Goods Destroyed and Waivers Taken.

	Packages
Elixirs	27
Fluid extracts	89
Pharmaceuticals	101
Syrups	22
Tinctures	84
Cold and grippe cures	306
Catarrh cures	264
Cough cures	1,127
Colic cures	400
Blood cures	327
Corn cures	10
Children remedies	255
Dyspepsia cures	208
Fever cures	77
Headache cures	266
Kidney cures	454
Laxatives	265
Linaments	34
Medicinal oils	16
Rheumatic oils	201
Salves	61
Tonics	500
Toothache cures	15
Finer chemicals	72
Heavy drugs	46
Tablets, filled capsules, etc.	43
Earache medicines	7
Total	5,277
Cotton absorbent	43 Lbs.
Bandages	20 "

FERTILIZERS.

Official Samples Taken and Analyzed.

Anacortes	6
Bellingham	24
Everett	2
Portland, Oregon	40
Seattle	60
Spokane	40
North Yakima	7
Tacoma	8
Walla Walla	6
Vancouver	12
Total	205

ANALYTICAL FEES FOR FERTILIZERS COLLECTED.

Aabling-Boyce Co., Seattle	$36 00
American Pacific Whaling Co., Bay City	48 00
Balfour Guthrie Co., Seattle	48 00
S. Blachley, Colton	18 00
Carstens Packing Co., Tacoma	120 00
Empire Packing Co., Spokane	72 00
Frye & Company, Seattle	30 00
W. R. Grace & Co., Seattle	6 00
James Henry, Seattle	36 00
Idaho Lime Co., Spokane	18 00
Inland Seed Co., Spokane	18 00
Jacob Kaufman, Spokane	36 00
Chas. H. Lilly Co., Seattle	288 00
National Potash and Iodine Co., Bremerton	18 00
Portland Seed Co., Portland	258 00
Nitrate Agencies Co., Seattle	6 00
Robinson Fisheries Co., Anacortes	24 00
Russia Cement Co., Anacortes	24 00
E. H. Stanton Co., Spokane	60 00
Seattle Seed Co., Seattle	24 00
Sylvester Brothers, Victoria, B. C.	10 00
Union Meat Co., Portland, Ore.	306 00
Walla Walla Meat Co., Walla Walla	60 00
Western Fertilizer Co., San Francisco, Cal.	36 00
Yakima Meat Co., North Yakima	12 00
Total	$1,612 00

REPORT OF DRUG INSPECTOR.

J. J. Higgins, Olympia, Washington.

Dear Sir: I submit a report of my work during the past two years, starting August 15, 1914, and ending July 31, 1916.

We have tried to reach every drug store and place where drugs are sold throughout the state, and excepting some general stores in isolated places, and of which we have no record, have done so at least once—some twice—and in the cities and where special reasons demanded, as many as four times each year.

At the time the present inspector started, there were upon the shelves of stores, several thousand bottles and packages of so-called patent medicines, which were all misbranded and many spoiled at the time the pure food and drug act took effect. These preparations were all put up in wrapped packages or cartons, making it very difficult to ascertain the condition of the medicine without destroying the package. However, the law gives each dealer the right to dispose of such in the ordinary course of trade. Some of them were upon the shelves as far back as 1898, and had become eye sores, and instead of trying to dispose of them, shoved them to the back of the shelves. Your inspector took the view that in so far as no reasonable effort had been made to dispose of them, they would stay for many more years.

Many stores had changed owners two and even more times and a few of the new owners were even trying to obtain new labels and wrappers to hide the age and then offer for sale or ship out of the state. As many of our poor are compelled to depend upon these prepared remedies, your inspector deemed eight years a reasonable time in which to have disposed of them. I opened many packages and found those containing volatile substances to have shrunk by evaporation, thus spoiling the entire package, or making the dose stronger, which in some cases was very dangerous.

From this showing of condition I have condemned and destroyed a large number of packages. This in many cases was a heavy loss to the druggist and shop keeper, but nearly all willingly gave them up. There are yet a few stores which have some such packages on hand, which they decline to destroy, but we are keeping a watch on them and will destroy them as soon as we find they violate the law.

As the drug stores carried most of the drugs, former inspectors paid most attention to them, until they were in very fair condition, but had not reached the country merchant on the cross roads who also carried drugs to supply the neighboring farmers and the country doctor when he came by. We have tried to reach this class of stores and during the past year have located and inspected about four hundred and taught them how to keep their drugs. We also have reached as many doctors' offices as we could find time, as some of them carry their own supply of drugs and with their limited knowledge of such are an easy victim of the smooth salesman who sells an inferior line. Some were kept in the most horrible condition, and were passed out indiscriminately and no record or prescription made of such sale whereby we or the patient could know if they were getting harmful drugs or not.

By courtesy of the state board of pharmacy, who made your inspector a deputy of their board, he was able to insist that such conditions be remedied and a proper record kept. While your department gets no particular credit for it, we have been able to furnish to the board a list of these shop keepers who sell drugs and enable them to collect the six-dollar license fee charged.

The State of Washington has thereby profited by many thousands of dollars annually by our work and the Department of Agriculture should receive some credit for the same. I believe all such license money should be paid through this Department, as we are the only ones giving the dealers any benefit from our inspections.

Wherever time would permit, I have visited soft drink establishments and caused owners to clean up their floors, fountains, glasses in which drinks are served, and taught them how to keep their fruits and syrups in clean and sanitary conditions, and have forced manufacturers to label artificial drinks on the sides of bottles instead of the caps which are removed when sold to the customer.

I have inspected every hospital, whether public or private, which I could find, and have insisted upon them keeping their drugs in a fresh, clean condition so the patient was sure of getting pure drugs.

We have had several bad fires in stores or near them so that stocks of drugs were saturated with dirty water. It has taken considerable time to go over each package and ascertain if they came in contact with filth or whether the water mixed with chemicals had changed the preparation into another compound or lessened the strength of it. This work does not show up for the time expended, and every food and drug establishment should be compelled by law to report to the Department every fire in their establishment, so an inspector could look over the stock before it is again offered for sale.

I find the lack of a sanitary law a very heavy drawback, as places where the stocks are chemically pure are sometimes in a very filthy condition.

I also find I very often waste as much as six and eight hours sitting on a depot platform waiting for trains which could be utilized to very much better advantage, and believe the legislature should supply automobiles to all inspectors the same as most all wholesale houses do their men; if it is cheap for them, it surely should be cheap for the state.

We have taken samples of various kinds of preparations and have made analysis of same and find that more care is being used in the manufacture of preparations, and by cautioning the dealers to make only an amount which would last a short time, there would be less liability of change from temperature and light, as in most every illegal sample the discrepancy was caused by temperature.

Respectfully submitted,
E. L. JONES,
Drug Inspector.

OIL INSPECTOR'S REPORT.

In submitting to you our second biennial report, you will note we date from July 1, 1914, to June 30, 1916.

During these months we have endeavored to secure inspections of all the oils shipped to the state under our jurisdiction and enforce the law pertaining thereto. We have not found this a difficult task, since there is a better understanding upon the part of oil vendors relative to inspections and the reasons therefor. We have with great care urged the matter of proper labeling and branding of barrels, packages and all other receptacles as provided according to law, so that this part of the work has been very satisfactorily done.

Two years ago we called your attention to a handicap relative to certain weaknesses of the law under which we were operating. We noted then as now, that while we have a minimum of Fahrenheit degree for illuminating oils there is no provision for a maximum, and that there is no standard of Baume for gasoline, benzine and distillate. While it is our duty to inspect these products for gravity, we are compelled to issue a certificate of inspection regardless of what we find. It is true, however, we have some recourse in the matter of branding the same and requiring the dealer to sell according to the gravity given by the oil inspector.

In December, 1914, with the assistance of Mr. Charles S. Gleason, an assistant attorney general, we drew up an amendment to the present law strengthening several of the weak points therein, the object of which was to secure for the public a better quality of oils and to require a more careful branding and stamping, as there had been a number of complaints that poor illuminating oil was being placed upon the market. Several accidents had occurred through a lack of proper labeling of oil and gasoline in cans and other receptacles. In one instance, through the mistake of using gasoline for kerosene in building a fire, the wife and two children lost their lives and the house in which they were living was totally destroyed by fire, and an effort was made in this amended bill to cover all receptacles containing either, by proper labeling, or in case of bottles the using of stickers.

This bill was prepared and placed before the proper committee during the last legislature and was passed out with recommendation for passage. An effort, however, was at this time made upon the part of certain interested parties to also create a law for the inspection of crude oil, commonly called fuel oil, and the committee thereafter, thinking it would be better to insert the inspection of crude oils and by-products into one bill, did so and succeeded by so doing in killing both bills, and, as you are well aware, we have been operating under the old law and the only one ever enacted in the State of Washington. There should be a better and stronger law enacted giving the oil inspector larger scope and a little more power to enforce certain provisions of said law. There should not only be an inspection law for kerosene, gasoline, benzine, and distillate, but also covering the inspection of lubricating oils, Toppings and other by-products of petroleum. Our inspection laws have proved invaluable to the public in general. Our interview with wholesalers relative to these matters has resulted in a better quality of oils now coming into the state than at any other time in recent years. Owing to the high price of gasoline there has been some disposition upon the part of certain dealers to mix the same with distillate, which necessarily makes an inferior quality and, therefore, sells cheaper; but we are glad to report this practice has practically ceased throughout the entire state.

Relative to the enforcement of the law, we have not found it necessary to file complaints for the selling of oils without their first having been inspected, except in one instance and that suit is still pending.

About the first of September, 1915, the Standard Oil Company brought suit against the state attacking the constitutionality of the law pertaining to the collection of fees. In this suit the right of the state to have an inspection law was admitted without question.

The suit was brought first in King county and afterward transferred to Thurston county, and was argued before Judge Wright in November, and the judge overruled the demurrer of the state. The Standard Oil Company wishing to amend its complaint, the case was again argued on February 7, 1916, and on the 24th day of March Judge Wright again overruled the demurrer of the state to the amended complaint. The case has been appealed to the supreme court, and in the meantime your oil inspector is continuing in the discharge of his duties and inspecting all oils coming into the state, furnshing certificates and keeping as nearly as possible correct record of the same.

In this report you will observe that from September, 1915, to June 30, 1916, we do not include collections of fees from the Standard Oil Company, this company having paid same into the registry of the court, which up to that date amounts to approximately $43,279.54. All the other companies have gone on as usual and paid their inspection fees, and the amount has passed through the hands of the commissioner into the general fund of the state. Therefore, in our tabulated statement we shall consider the portion of our report relating to the Standard Oil Company as somewhat incomplete, the matter having passed entirely out of our hands, and we have been compelled to depend upon the attorneys of the Standard Oil Company for such gallonage and fees as has been turned into the court, save the fact that we have kept as close a check on the gallonage as has been possible so to do in the existing circumstances.

Below you will find a tabulated statement of gallonage and fees, with the exception of the Standard Oil Company herein mentioned, as taken from our books, the monthly reports of which have been placed in your hands, and, I believe, have so far been found correct. We have endeavored to faithfully discharge our duties, do all the work pertaining thereto with diligence and watchful economy, and feel in submitting this report that nothing has been left undone that we should have attended to, so far as is known to us.

Respectfully submitted,

S. P. WILSON, State Oil Inspector.

Monthly Oil Inspections, Together With Fees for Inspections, From July 1, 1914, to June 30, 1916.

1914.	*Gallons.*	*Fees.*
July	3,304,375	$6.608 75
August	3,093,940	6,187 88
September	2,055,930	4,111 86
October	3,874,380	7,748 76
November	3,213,300	6,426 60
December	3,516,335	7,032 67
1915.		
January	1,883,255	3,766 51
February	1,797,690	8,595 38
March	3,038,310	6,076 62
April	4,210,460	8,420 92
May	3,208,580	6,417 16
June	3,839,255	7,678 51
July	2,220,460	4,440 92
August	4,444,730	8,889 46
September	1,458,595	2,917 19
October	867,890	1,670 52
November	1,025,635	2,051 27
December	691,515	1,383 03
1916.		
January	804,930	1,609 86
February	612,615	1,225 23
March	1,005,200	2,010 40
April	1,176,765	2,353 53
May	867,890	1,740 37
June	1,009,173	2,018 34
	53,188,578	$106.377 16

AMOUNT OF INSPECTION FEES DEPOSITED WITH CLERK OF COURT AT OLYMPIA IN SUIT OF STANDARD OIL CO. VS. GRAVES ET AL.

	TACOMA		SPOKANE		SEATTLE		PORTLAND	
	Oil in Gallons	Fee	Oil in Gallons	Fee	Oil in Gallons	Fee	Oil in Gallons	Fee
September, 1915	610,000	$1,220 00	78,580	$157 16	2,404,665	$4,809 33	254,970	$509 94
October, 1915	292,315	584 63	144,105	288 21	1,567,315	3,134 63	172,325	344 65
November, 1915	464,280	928 56	41,080	82 16	499,010	998 02	178,075	356 15
December, 1915	483,020	966 04	41,020	82 04	417,895	835 79	159,027	318 05
January, 1916	556,865	1,113 73	102,780	205 56	2,062,208	4,124 41	111,210	222 42
February, 1916	447,400	894 80	92,060	184 12	1,459,090	2,918 18	100,730	201 46
March, 1916	508,385	1,016 77	30,455	60 91	997,685	1,995 27	106,535	213 07
April, 1916	301,615	603 25	....	....	2,547,736	5,091 47	97,191	194 38
May, 1916	....	....	....	....	1,218,068	2,436 08	113,250	226 50
June, 1916	625,493	1,250 98	....	....	2,234,212	4,468 42	121,213	242 42
Totals	4,289,373	$8,578 74	530,080	$1,000 16	15,405,804	$30,811 60	1,414,526	$2,829 04

Grand Total—Gallons, 21,639,783.
Fees, $43,279.54.

SEED LABORATORY REPORT

The following is the report of the Seed Laboratory during the past two years, from July 1, 1914, to June 30, 1916, inclusive:

The law provides for:

(1) The inspection of commercial seed in the markets of this state.

(2) The enforcement of the law and penalties for violation.

(3) Proper labeling of agricultural seeds sold in lots of one pound or more.

(4) That seed offered for sale in this state must be free from the seeds of wild mustard or Charlock, quack grass, Canada thistle, wild oats, dodder, and corn cockle.

(5) The free testing of seeds for any resident of the state who is going to use the seed himself.

OFFICIAL INSPECTIONS.

The number of inspections made in the past two years during the seed season were five hundred and fifty-two (552). The principal cities and towns of the state, numbering seventy-one (71), have been visited and all seed markets inspected.

In most cases the seed dealers are very kindly disposed to the inspection of their stock and are glad to know of ways of bettering seed conditions.

Marked improvement is noticeable in the quality of seed carried by dealers. Through the enforcement of the seed law and the increasing demand of farmers for better seed, dealers are forced to carry better grades than a few years previous.

Progressive farmers today are insisting upon seeds of high test, and are also obtaining samples from their dealer to have tested before purchasing, thereby eliminating risk of seed not being as represented.

The greatest difficulty has been experienced with dealers of other states who sell to dealers of this state. Whenever possible such dealers have been notified that seed shipped into the state by them must comply with the law, and copies of the law have been sent to them. The refusal of seed which does not conform to our standards, by the dealers of the state, has done a great deal to remedy this condition.

Another difficulty, which not only works a hardship on the seed dealer trying to comply with the law, but also is a detriment to better seed conditions, is the fact that farmers, who do not appreciate the value of good seed, are buying seed from their neighbors. The seed as a rule is just as it comes from the field, uncleaned, and contains a large percentage of foul seed. Frequently complaints come in from dealers of certain localities where such conditions exist.

The present law makes no provision for the regulation of such seeds as are sold by the farmer direct to the consumer.

Table No. 1.—Source of Samples, Number and Kind of Test Made.

SAMPLE SENT BY	Number of Samples	Identification	Examination	Purity	Germination	Total Tests
Individuals	134	21	49	64	66	200
Dealers	47	7	20	42	60	129
Inspectors	614	....	649	133	109	891
Totals	795	28	718	239	235	1,220

PROSECUTIONS.

On December 10, 1914, the Chas. H. Lilly Co. were found guilty of violating the pure seed law, having sold alsike clover below the standard of purity. They were required to pay $100.00 as damages, and to furnish one hundred pounds of new seed to purchaser.

May 29, 1916, State of Washington vs. Aabling & Boyce. Charge. Selling five (5) pounds alfalfa containing dodder. Fined $10.00 and costs. Paid.

LABELING.

One of the important provisions of the law is that of labeling seed. All seed offered for sale in the state must be labeled either "Standard" in accordance with those set forth by law or with the per cent of purity, specifying the kind and per cent of impurities, provided they are below the standard prescribed by law.

The method of labeling is left with the wholesaler so long as it meets the requirements of the law. Some stencil the sacks; others attach tags to them. A very commendable method which some dealers have adopted is that of sending a duplicate copy of the purity and germination report with the shipment of seeds. These methods are not only good advertising but a great help to the purchaser.

THE SEED LABORATORY.

The Seed Laboratory is equipped with practically the same apparatus that is used in all the seed laboratories of the U. S. Department of Agriculture.

It consists of a seed mixer and sampler, a Sartorius balance, also a Henry Troemner balance, a vertical air-blast separator, a nest of fine perforated brass sieves, two standard germinating chambers. These germinators are equipped with automatic regulators which keep a constant temperature, representing natural conditions as nearly as possible.

The object of the Seed Laboratory is to give correct information concerning seed. If every farmer would make use of the Seed Laboratory and avail himself of the opportunity of having seed tested before using it, dealers would be forced to carry the best grades, and poor seed would be taken from the markets. (Tests are made free of charge for farmers.)

THE SEED LAW.

Washington is one of twenty-seven states having a specific seed law. Others are Idaho, Iowa, Kentucky, Maine, Maryland, Michigan, Minnesota, Montana, Nebraska, New Jersey, New Hampshire, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming.

All seed analysts connected with the U. S. Department of Agriculture, with any state, agricultural experiment station, or agricultural college are organized into an association which convenes every year. Uniformity of seed methods and ways of bettering seed conditions are discussed at these meetings.

A uniform state seed law is under construction and it is hoped in time that a uniform law as well as uniform methods of testing will be used in all states.

The Washington seed law has been found very applicable in most cases. During the session of legislature in 1915, Section 3055, R. & B., requiring the year in which seed was grown to be plainly marked on each package of vegetable seed, was amended. It was found impossible to enforce it, as seed is contracted from so many growers and so much of it is imported that correct information could not be obtained.

The amended section now applies to the germinable viability of vegetable seed, giving minimum standards for the different species of vegetables. This amendment has proven a success, as it can be complied with by seed merchants.

The seed law protects farmers and other purchasers of seed against poor seeds containing noxious weeds and seeds that are of low vitality. It also provides a protection to the conscientious dealer and enables him to sell better qualities of seed.

SUBMITTING SAMPLES.

Samples of seed submitted to the laboratory for a test should be a fair sample of the lot from which it is taken in order that the results will be accurate and will show the true character of the lot being examined. If the seed is in sacks, bags, or bins, the sample should be taken to represent the top, bottom, and middle of the container. A good handful is large enough for a sample of most seeds.

They should be carefully sealed in an envelope and sent to the Department. A letter should accompany the sample advising kind of test desired, giving name of seed, and the name and address of the sender. Tests are made on the receipt of same and results mailed as soon as possible.

PURITY TESTS.

When a sample of seed is received it is given a laboratory number which marks all recording data and envelopes used in filing this sample of seed. It is then put into the seed mixer and sampler to obtain a representative sample of the lot submitted. The sample is next weighed accurately, after which separations are made by hand and by means of an air-blast separator. A nest of sieves also greatly facilitates a seed test. The separations are then weighed and percentages worked out, giving the per cent of pure seed, per cent of inert matter, and per cent of foreign seed. The results are placed on the record card. Each lot of foreign seed is correctly named and entered on the card together with the number found. The report sent out to the individual gives the common names of weeds and the approximate number per pound of each weed seed found. Patience and skill are required in identifying the seeds of weeds and commercial plants.

The following table gives the standards set forth in the Washington seed law for grains and forage seeds:

STANDARDS OF PURITY AND VIABILITY OF AGRICULTURAL SEEDS.

Name of Seeds	*Per Cent of Purity*	*Per Cent of Germinable Seeds*
Alfalfa (Medicago sativa)	96	80
Barley	98	90
Blue grass, Canadian (Poa compressa)	90	45
Blue grass, Kentucky (Poa paratensis)	80	45
Brome, awnless (Bromus inermis)	90	75
Buckwheat	96	90
Clover, alsike (Trifolium hybridum)	90	75
Clover, crimson (Trifolium incarnatum)	98	85
Clover, red (Trifolium pratense)	92	80
Clover, white (Trifolium repens)	90	75
Corn, field (Zea mays)	99	94
Corn, sweet	99	75
Fescue, meadow (Festuca pratensis)	95	85
Flax (Linum usitalissimum)	96	89
Millet, common (Setaria italica)	90	85
Millet, hog (Panicum miliaceum)	90	85
Millet, pearl (Penisetum typhoideum)	99	65
Oats (Avena sativa)	98	90
Oat grass, tall (Arrhena therum aven)	72	70
Orchard grass (Dactylis glomerata)	70	70
Rape (Brassica rapa)	99	90
Redtop (Agrostic alba)	90	70
Rye (Secala cereale)	98	90
Rye grass, perennial (Lolium perenne)	96	90
Rye grass, Italian (Lolium italicum)	95	80
Sorghum (Andropogon sorghum)	96	80
Sorghum for fodder	90	60
Timothy (Phleum pratense)	96	85
Wheat (Triticum)	98	90

GERMINATION TESTS.

It is equally as important to know that seeds are of good vitality as to know that they are free from noxious weeds. Seed may be very high in purity and yet be low in germination qualities. A test for germination is therefore necessary. Very often the leguminous seeds, such as alfalfa, red, white and alsike clover, contain a large per cent of hard seeds. They have very hard seed coats which moisture can not penetrate. They remain the same during the entire test. Hard seeds in any amount are disappointing and should be avoided. A good standard is impossible unless the seed all germinates at the same time.

They have the same appearance as good seed. If the seed coat can be scratched in some way they will germinate in the required time.

Simple methods of germinating seed may be used for most seeds in the home. Count one hundred seeds of grain or two hundred of small seeds, such as the clovers, and place them between double thicknesses of Canton flannel or blotting paper. Put them between dinner plates and keep moist but not wet. Keep in a room of ordinary temperature of about seventy degrees.

Table No. 3.—Giving Seed Bed, Temperature and Length of Time Used in Testing the Germination of Forage Crop Seeds.

GERMINATION TABLE.

KIND OF SEED	Seed Bed	Temperature	Length of Time
Alfalfa	Between blotters	68° F.	5 days
Barley	Between blotters	68° F.	6 days
Brome grass	Between blotters	68°-86° F.	10 days
Buckwheat	Between blotters	68°-86° F.	5 days
Clover, red	Between blotters	68° F.	5 days
Clover, alsike	Top of blotter	68° F.	5 days
Clover, white	Top of blotter	68° F.	5 days
Corn	Cloth	68°-86° F.	5 days
Cow peas	Cloth	68°-86° F.	8 days
Flax	Top of blotter	68°-86° F.	6 days
Millet	Between blotters	68°-86° F.	5 days
Oats	Between blotters	68°-86° F.	5 days
Orchard grass	Between blotters	68°-86° F.	14 days
Rape	Between blotters	68° F.	6 days
Rye	Between blotters	68° F.	5 days
Red top	Top of blotter	68°-86° F.	10 days
Sorghum	Between blotters	68°-86° F.	6 days
Timothy	Top of blotter	68° F.	5 days
Wheat	Between blotters	68° F.	5 days
Kentucky blue grass	Top of blotter under bell jar	68°-86° F.	28 days

Table No. 4.—Giving Seed Bed, Temperature and Length of Time Used in Testing the Germination of Vegetable Seeds.

GERMINATION TABLE.

KIND OF SEED	Seed Bed	Temperature	Length of Time
Asparagus	Between blotters	68°-86° F.	14 days
Beans	Cloth	68°-86° F.	6 days
Beets*	Between blotters	68°-86° F.	10 days
Cabbage	Between blotters	68° F.	6 days
Cauliflower	Between blotters	68° F.	6 days
Carrots	Between blotters	68°-86° F.	14 days
Celery	Top of blotter	68°-86° F.	18 days
Citron	Cloth	68°-86° F.	6 days
Cucumber	Between blotters	68°-86° F.	6 days
Endive	Top of blotter	68° F.	8 days
Lettuce*	Between blotters	68° F.	3 days
Muskmelon	Between blotters	68°-86° F.	6 days
Onion	Between blotters	68°-86° F.	7 days
Parsley	Between blotters	68°-86° F.	28 days
Parsnip	Between blotters	68°-86° F.	14 days
Peas	Cloth	68°-86° F.	6 days
Pepper	Between blotters	68°-86° F.	10 days
Pumpkin	Cloth	68°-86° F.	6 days
Radish	Between blotters	68° F.	6 days
Salsify	Between blotters	68°-86° F.	10 days
Spinach	Between blotters	68° F.	10 days
Squash	Cloth	68°-86° F.	6 days
Tomatoes	Between blotters	68°-86° F.	10 days
Turnip	Between blotters	68° F.	6 days
Watermelon	Cloth	68°-86° F.	6 days

* Soak six hours before test is started.

EDUCATIONAL WORK.

Educational work has been carried on in the way of exhibits at various fairs throughout the state. In September, 1914, the Walla Walla Fair and the State Fair at North Yakima were attended. In September and October of 1915 the State Fair at North Yakima and the Pierce County Fair at Puyallup were attended.

STATE SEED EXHIBIT.

The seed exhibit consists of numbers of herbariums of weed seeds, four large manifold screens, containing mounted weed specimens with samples of seed of each and information attached giving injury and remedies for eradicating these pests; two large glass cases containing exhibit jars of commercial seed, both field and vegetable; colored plates of weeds with appended notes attached giving means of eradicating each; six dozen varieties of weed seeds mounted in cotton to bring out distinguishing features; attractive colored posters; also placards giving classification of weeds.

A part of the seed exhibit was shown at the Panama-Pacific Exposition at San Francisco in 1915.

SEED TESTS.

A Standard germinating chamber was exhibited showing laboratory method of giving seed the germination test. Home methods of germinating seeds were shown, giving ways farmers can test seed at home. Although simple, these methods are not generally known.

Comparative purity tests were given, showing the difference between good and bad seed, bringing out the importance of buying good seed rather than cheap seed. Farmers are surprised as a rule to know that a few cents more or less can make such a difference in the quality of the seed.

Farmers have manifested increasing interest each succeeding year in the exhibit, particularly in becoming familiar with weeds and means of eradicating them, also with poisonous weeds, such as camas, wild parsnip and various others which are dangerous to stock.

WEED TRIPS.

The Department receives occasional requests to visit ranches to locate and identify poisonous plants which have killed livestock. Several trips of this kind were made. In one instance five thoroughbred cattle died from the effects of wild parsnip. Stockmen should be familiar with poisonous weeds—at least the most common ones—as they often suffer great losses due to them.

FOREIGN AND NOXIOUS WEEDS.

Foreign and noxious weed seeds are very often present in the various agricultural seeds. They not only reduce the quality of seeds but a great deal of damage is done to the crop. By sowing clean seed this can be avoided.

If farmers really knew the great losses due to weeds they would make more of an effort to eradicate them and would buy good grades of seed.

Canada thistle is perhaps one of the worst pests in the state. It is a perennial and has very deep running rootstocks and is a vigorous grower. The nature of the plant makes it hard to eradicate. Wherever the rootstocks are broken they send up new shoots. Being a deep-rooted plant, Canada thistle should be plowed deep in summer just as the flowers open. As new shoots appear they should be cut down. Persistent effort will eradicate Canada thistle. The seed often occurs in grasses and clovers and in seed oats.

Though insignificant in appearance, dodder seed is a very formidable enemy to the farmer. It is a pernicious parasitic plant and is often called "love vine" from the nature of its clinging qualities. The tiny vine grows from the seed until it can find a plant to cling to. It then sends little root-like suckers into the neighboring plant and breaks away from the seed in the ground, obtaining its nourishment from the plant. It is a tiny thread-like vine having no leaves, which spreads from branch to branch until it has formed a thick mass covering large areas. Dodder bears white blossoms and is a gross seeder, bearing approximately more than a million seeds per pound. Clean cultivation and burning are the best remedies for eradication. Dodder is found in alfalfa and clover seed. Commercial seeds containing Canada thistle or dodder are prohibited for sale in the seed markets. As a consequence both are somewhat under control and are gradually disappearing. The law cannot be enforced too stringently in prohibiting the sale of seeds containing noxious weeds.

The following table shows some of the most common weed pests and the approximate number each bears per pound:

TABLE NO. 5.

COMMON NAME	SCIENTIFIC NAME	Number of Seeds
Dodder	Cuscuta spp.	1,814,360
Plantain	Plantago major	1,814,360
Lamb's quarters	Chenopodium album	604,786
Canada thistle	Carduus arvensis	566,987
Buckhorn	Plantago lanceolata	348,915
Russian thistle	Salsola tragus	266,817
Wild mustard	Brassica arvensis	215,965
Green foxtail	Chaetochloa viridis	206,177
Bull thistle	Carduus lanceolatus	174,457
Quack grass	Agropyron repens	137,148
Wild buckwheat	Polygonum convolvulus	119,365
Corn cockle	Agrostemma githago	45,359

TABLE NO. 6.—RESULTS OF PURITY TESTS.

KIND OF SEED	Standards	Number of Tests	PURE SEED			INERT MATTER			FOREIGN SEED		
			Highest Test	Lowest Test	Average Test	Highest Test	Lowest Test	Average Test	Highest Test	Lowest Test	Average Test
Alfalfa (Medicago sativa)	96	50	99.9	98.50	96.50	1.40	0.40	0.39	6.24	0.02	0.57
Barley (Hordeum vulgare)	98										
Blue grass, Canada (Poa compressa)	90										
Blue grass, Kentucky (Poa pratensis)	80	5	98.80	89.20	95.58	10.70	0.60	3.50	1.40	0.10	0.91
Brome, awnless (Bromus inermus)	90										
Clover, alsike (Trifolium hybridum)	90	18	99.46	77.00	91.05	8.70	0.10	0.76	22.15	0.19	3.00
Clover, red (Trifolium pratense)	92	48	99.80	84.30	97.64	2.74	0.02	0.52	15.08	0.06	1.82
Clover, white (Trifolium repens)	90	13	99.45	92.00	97.19	1.00	0.10	0.48	7.40	0.30	2.34
Corn, field (Zea mays)	99										
Corn sweet	99										
Millet, common (Seteria italica)	90										
Oats (Evena sativa)	98	1	98.00								
Orchard grass (Dactylis glomerata)	70	3	95.50	88.60	91.00	9.45	1.75	6.23	3.60	1.95	6.76
Rape (Brassica rapa)	99	1	99.58								
Redtop (Agrostis alba)	90										
Vetch, spring (Vicia sativa)	90	1	98.96								
Vetch, winter or hairy (Vicia villosa)		1	97.86								
Rye grass, perennial (Lolium perenne)	96										
Rye grass, Italian (Lolium italicum)	95	3	98.65	94.85	96.15	5.20	1.00	2.88	2.10	0.35	0.96
Sorghum (Andropogon sorghum)	98	2	97.26	97.02	97.14	2.76	2.58	4.67	0.22	0.16	0.19
Timothy (Phleum pratense)	96	23	99.65	84.60	97.92	2.65	0.05	0.52	14.90	0.05	1.60
Wheat (Triticum aestivum)	98										

TABLE NO. 7.—RESULTS OF GERMINATION TESTS.

KIND OF SEED	Standards	Number of Tests				PER CENT. OF HARD SEEDS		
			Highest Test	Lowest Test	Average Test	Highest Test	Lowest Test	Average Test
Alfalfa (Medicago sativa)	80	35	96.50	54.00	86.60	46.00	3.50	10.73
Barley (Hordeum vulgare)	90	4	100.00	93.50	96.67			
Bluegrass, Canadian (Poa compressa)	45							
Bluegrass, Kentucky (Poa pratensis)	45	9	64.00	6.00	43.00			
Brome, awnless (Bromus inermus)	75	1	94.00					
Clover, alsike (Trifolium hybridum)	75	15	94.50	73.00	87.40	27.00	5.50	12.53
Clover, red (Trifolium pratense)	80	42	94.90	80.00	82.93	35.00	6.00	14.51
Clover, white (Trifolium repens)	75	12	94.00	74.00	81.75	25.00	6.00	19.75
Corn, field (Zea mays)	94							
Corn, sweet	75	1	100.00					
Millet, common (Seteria italica)	85	1	91.50					
Oats (Avena sativa)	90	3	100.00	64.00	82.50			
Orchard grass (Dactylis glomerata)	70	8	80.50	69.50	74.66			
Rape (Brassica rapa)	90							
Redtop (Agrostis alba)	70	2	87.50	11.50	49.50			
Vetch, spring (Vicia sativa)		2	99.50	95.50	97.50			
Vetch, winter or hairy (Vicia villosa)		1	52.00					
Rye grass, perennial (Lolium perenne)	90	1	92.00					
Rye grass, Italian (Lolium italicum)	80							
Sorghum (Andropogon sorghum)	80	2	88.50	84.00	86.25			
Timothy (Phleum pratense)	85	20	99.00	78.00	91.82			
Wheat (Triticum aestivum)	90	2	99.50					

TABLE NO. 8.—SHOWING THE OCCURRENCE OF FOREIGN SEEDS IN AGRICULTURAL SEEDS.

Number of Samples Tested		179	4	88	104	53	1	6	5	43	6	1	4	2	43	5	4
NAMES OF		Alfalfa	Barley	Clover, Alsike	Clover, red	Clover, white	Grass, Canadian blue	Grass, English rye	Grass, Italian rye	Grass, Kentucky blue	Grass, Orchard	Millet	Oats	Redtop	Timothy	Vetch	Sorghum, Sudan grass
FOREIGN SEEDS		NUMBER OF TIMES OCCURRING															
Scientific Name	Common Name																
Acalypha virginica	Three-seeded mercury					2											
Achillea millefolium	Yarrow				1										12		
Agrostis alba	Redtop *			1											5		
Agrostemma githago	Cockle †															1	
Alsine Media	Chickweed																
Amaranthus graecizans	Tumbling amaranth				2	3	1										2
Amaranthus retroflexus	Rough pigweed	2			2	2					2						
Ambrosia artemisiaefolia	Ragweed																
Anthemis arvensis	Field camomile				1	1					1						
Anthemis cotula	Mayweed			8	6												
Anthyllis vulneraria	Kidney vetch												1				
Arenaria serpyllifolia	Thyme leaved sandwort			1													
Atriplex sp.	Saltbush	2															
Avena fatua	Wild oats †												1				
Avena sativa	Oats *		2														
Barbarea vulgaris	Winter cress	5															
Brassica sp.	Mustard	3			5										5		
Bromus secalinus	Chess								1					1			
Bromus hordeaceus	Soft chess				1						2					1	
Bromus inermus	Field chess										1						
Capsella bursa-pastoris	Shepherd's purse							1		2					8		
Camelina sativa	Large seeded false flax					3											
Carduus arvensis	Canada thistle †	1			6										2		

* Agricultural seeds. † Noxious weeds.

Table No. 8.—Showing the Occurrence of Foreign Seeds in Agricultural Seeds—Continued.

NAMES OF FOREIGN SEEDS Scientific Name	Common Name	Alfalfa	Barley	Clover, Alsike	Clover, red	Clover, white	Grass, Canadian blue	Grass, English rye	Grass. Italian rye	Grass, Kentucky blue	Grass, Orchard	Millet	Oats	Redtop	Timothy	Vetch	Sorghum, Sudan grass
Number of Samples Tested		179	4	88	104	53	1	6	5	43	6	1	4	2	43	5	4
		NUMBER OF TIMES OCCURRING															
Carduus lanceolatus	Bull thistle	3			8												
Carex sp.	Sedge			1													
Centaurea picris	Russian knapweed	17															
Centaurea salstitialis	Star thistle	2															
Cerastium vulgatum	Mouse-ear chickweed									1					2		
Chaetochloa glauca	Yellow foxtail				1												
Chaetochloa italica	Millet *	2															
Chaetochloa viridis	Green foxtail	20		1	13	5											1
Chenopodium album	Lamb's quarters	9		1	6	3		1							9		
Chenopodium fremontii	Fremont's goose-foot			3													
Chrysanthemum leucanthemum	Ox-eye daisy							2									
Cichorium intybus	Chicory	5															
Conium maculatum	Poison hemlock														1		
Conringia orientalis	Hare's-ear mustard					8											
Cuscuta sp.	Dodder †	14			2												
Dactylis glomerata	Orchard grass *							1									
Daucus carota	Wild carrot					1									1		
Digitaria humifusa	Small crab-grass				2												
Echinochloa crus-galli	Barnyard grass	11			10												
Epilobium paniculatum	Panicled willow herb																
Erodium cicutarium	Afilaria	2															
Euphorbia nutans	Spurge				1												
Fescue ovina duriuscula	Sheep's fescue grass													1			

* Agricultural seeds. † Noxious weeds.

Table No. 8.—Showing the Occurrence of Foreign Seeds in Agricultural Seeds—Continued.

NAMES OF FOREIGN SEEDS — Scientific Name	Common Name	Alfalfa	Barley	Clover, Alsike	Clover, red	Clover, white	Grass, Canadian blue	Grass, English rye	Grass, Italian rye	Grass, Kentucky blue	Grass, Orchard	Millet	Oats	Redtop	Timothy	Vetch	Sorghum, Sudan grass
Number of Samples Tested		179	4	88	104	58	1	6	5	48	6	1	4	2	43	5	4
		NUMBER OF TIMES OCCURRING															
Geranium dissectum	Cut-leaved crane's bill	2			6												
Geranium pusillum	Small flowered crane's bill				1												
Gramineae sp.	Grass species	12			12	1									2		
Helianthus annuus	Common sunflower				3										1		
Holcus lanatus	Velvet grass					1											
Hordeum vulgare	Barley																
Juncus tenuis	Slender rush																
Lepedium apetalum	Peppergrass	2					1	1			1			1	1		
Lepedium campestra	Field peppergrass														1		
Lepedium draba	Hoary cress			1													
Lepedium virginicum	Peppergrass			1													
Latuca vircsa	Prickley lettuce				3												
Lolium perenne	Perennial rye grass								1								
Lotus corniculatus	Bird's-foot trefoil			4	1												
Malva sp.	Mallow	8			1										1		
Medicago lupulina	Trefoil	11		3		7											
Medicago sativa	Alfalfa *			1	2										1		1
Melilatus alba	Sweet clover	2															
Nepeta cataria	Catmint					1											
Oenothera biennis	Evening primrose														1		
Panicum capillare	Witch grass				2												
Paspalum setaceum	Slender paspalum																
Phalaris canariensis	Canary seed																

* Agricultural seeds.

Table No. 8.—Showing the Occurrence of Foreign Seeds in Agricultural Seeds—Continued.

NAMES OF FOREIGN SEEDS		Alfalfa	Barley	Clover, Alsike	Clover, red	Clover, white	Grass, Canadian blue	Grass, English rye	Grass, Italian rye	Grass, Kentucky blue	Grass, Orchard	Millet	Oats	Redtop	Timothy	Vetch	Sorghum, Sudan grass
Number of Samples Tested		179	4	88	104	58	1	6	5	43	6	1	4	2	43	5	4
Scientific Name	Common Name	NUMBER OF TIMES OCCURRING															
Phleum pratense	Timothy *			8	24	11			1		2						
Picris echioides	Ox-tongue	3															
Plantago aristata	Bracted plantain																
Plantago lanceolata	Buckhorn plantain	25		8	26	4			1	2					4		1
Plantago major	Plantain				1	4									1		
Plantago rugelii	Rugel's plantain				1												
Poa sp.	Bluegrass	1		8	2	2					8				8		
Polygonum aviculare	Knotweed																
Polygonum convolvus	Black bindweed	2			1												
Polygonum hydropiper	Smartweed				1								2				
Polygonum persicaria	Lady's thumb				1					2							
Potentilla sp.	Five-finger					1									8		
Prosopsis glandulosa	Prairie mesquite	2		4	8												
Prunella vulgaris	Heal-all					2											
Ranunculus bubosus	Bulbous buttercup	1							1								
Rudbeckia hirta	Brown-eyed Susan														2		
Rumex caetosella	Sorrel			17	29	8			1	1	2				10	1	1
Rumex crispus	Curled dock	15		2	22	4					2					1	
Salsola tragus	Russian thistle	8			7												
Sida spinosa	Spiny sida			1													
Silene antirrhina	Sleepy catch-fly					1											
Silene noctiflora	Night-flowering catch-fly	3		1	1	1											
Solanum nigrum	Deadly nightshade																

* Agricultural seeds.

Table No. 8.—Showing the Occurrence of Foreign Seeds in Agricultural Seeds—Continued.

Number of Samples Tested		179	4	88	104	53	1	6	5	43	6	1	4	2	43	5	4
NAMES OF FOREIGN SEEDS		Alfalfa	Barley	Clover, Alsike	Clover, red	Clover, white	Grass, Canadian blue	Grass, English rye	Grass, Italian rye	Grass, Kentucky blue	Grass, Orchard	Millet	Oats	Redtop	Timothy	Vetch	Sorghum, Sudan grass
Scientific Name	Common Name	NUMBER OF TIMES OCCURRING															
Spergula arvensis	Spurry	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Stellaria media	Common chickweed	2	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....
Syntherisma linearis	Small crab-grass	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
Syntherisma sanguinalis	Crab-grass	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
Thlaspi arvense	Field pennycress	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....
Trifolium sp.	Clover *	....	....	5	....	....	....	....	....	....	....	....	....	....	....	....	....
Trifolium hybridum	Alsike clover *	....	....	....	19	15	1	....	....	....	....	....	....	....	6	....	....
Trifolium incarnatum	Crimson clover *	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
Trifolium pratense	Red clover *	10	....	8	1	2	....	....	....	....	....	....	....	....	3	....	....
Trifolium procumbens	Low hop clover	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Trifolium repens	White clover *	....	....	10	11	....	....	....	....	....	....	....	....	....	2	....	....
Triticum aestivium	Wheat *	....	1	....	1	....	....	....	1	....	....	....	1	....	....	1	....
Undetermined		....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....
Utrica gradilis	Slender nettle	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
Valerianella sp.	Corn salad sp.	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....
Verbena sp.	Vervain sp.	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....
Verbascum blattaria	Moth mullein	....	....	....	....	....	....	....	....	....	....	....	....	....	6	....	....
Veronica arvensis	Corn speedwell	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....
Veronica serpyllifolia	Thyme-leaved speedwell	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
Vicia sp.	Vetch *	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....

* Agricultural seeds.

Pure seed is a most important factor in successful farming. If the annual losses caused by weeds on the farms in the state were calculated the amount would be found alarming.

The enforcement of the pure seed law is doing a great deal to prevent the spread of noxious weeds through seeds offered for sale. Were the weed laws observed more stringently it would be a great benefit to the farmer. Farmers and legislators should co-operate to control these pests. Land is too high priced to be allowed to be robbed of its productiveness by weeds.

It is discouraging to buy clean seed and to spend time preparing the seed bed only to find the land infested with weeds from the roadside and vacant lots near by.

The Department welcomes and gives careful consideration to all suggestions received that may have a tendency to increase its usefulness in fighting the foul seed problem.

Requests for seed tents and inquiries as to seeds and plants should be addressed to the Seed Laboratory, Department of Agriculture, Olympia, Washington.

Respectfully submitted,
KATHERINE G. STONE,
State Seed Analyst.

WASHINGTON STATE FAIR

Hon. H. T. Graves, Acting Commissioner of Agriculture.

SIR: I have the honor to submit to you herewith a resumé of the Washington State Fair for the years 1915 and 1916, together with suggestions for the betterment of the institution during the forthcoming biennium.

The Legislature of 1915 appropriated $35,000.00 for the 1915 and 1916 State Fairs. Of this amount approximately $10,000.00 was expended for equipment, repairs and permanent improvements—the principal items for which are as follows: Construction of mezzanine floor, woman's rest room, plumbing, bandstand, railings and exhibition booths in the Horticultural Building, wiring and equipping same with electric lamps, constructing one livestock barn, 50 by 250 feet, one livestock barn 50 by 235 feet; one-half of the cost of the latter being paid for by the Cascade International Stock Show, constructing an addition to the swine exhibits shed, 80 feet in length, constructing an addition to the hospital—thereby doubling its capacity, installing show cases in the Woman's Building, building booths in the Child Welfare Building and installing nursery in same, building exhibit and demonstration booths in the Machinery Building for the accommodation of the Children's Industrial Department, repairing Grandstand and rearranging boxes in same, building new fences, cutting down mound in center field, which was an obstruction to the view of the races, rebuilding stalls in horse barn, reroofing Poultry Building, repairing roofs on other buildings, plumbing, painting and papering cottage, wiring grounds and buildings and equipping completely with nitrogen and mazda electric lamps, painting Horticultural, Woman's, Children's and Machinery buildings, purchasing fire extinguishers, agricultural implements and office furniture and fixtures, and also making innumerable small repairs.

The construction of the livestock barns was made necessary on account of a fire having occurred during the Summer of 1915, which completely destroyed two of the old ones and seriously damaged another; the cost of the repair of which figures as a part of the expenditures noted above. The larger of the stock barns contains four rows of stalls and accommodates twice as many cattle as the old one did. The other new barn is not equipped with stalls, but is used for stock judging purposes.

The 1915 Fair was a success in every particular, and it was the verdict of many who were in a position to know that it was the best ever held upon the grounds up to that time.

The 1916 Fair was larger and better than that of 1915, except possibly the livestock department. With the exception of the exhibition of dairy cattle, exhibits in every department exceeded those of

1915, and notwithstanding the additional space afforded by the construction of the mezzanine floor in the Horticultural Building, it was full to overflowing with horticultural, agricultural and manufactured exhibits. The same may be said of every other exhibits building. In addition to this, the grounds were well filled with exhibits of various kinds, shown under canvas furnished by the exhibitors. A marked increase in the number of agricultural exhibits from the various counties of the state is noted. For the first time a Boys' and Girls' Camp composed of industrial teams from the different counties, was conducted with great success, which in connection with the children's exhibit afforded one of the best features of the Fair. The Child Welfare Exhibit, in conjunction with which was conducted a Day Nursery, was also an innovation which was well received.

While the attendance at the 1916 Fair exceeded that of 1915, it was disappointingly small, and it seems as though the interest in the Fair by many of those living in North Yakima and the Yakima Valley is not as manifest as it should be. The same may also be said of some of the breeders of dairy cattle, residing in the valley, whose herds were conspicuous by their absence this year. Whether these conditions were caused by the superabundance of work on hand, occasioned by the lateness of the season, or whether it is on account of the annual livestock show, which was instituted in North Yakima last year, dividing the interest of the business men and stock raisers, is a matter of conjecture. Nevertheless the financial statement shows a goodly balance on the right side of the ledger.

Several of the buildings are old and inadequate. Especially is this true of the Grandstand and also the Machinery Building. It is imperative that the Grandstand be replaced by a new structure before another Fair if racing is to be continued as one of the features. A building to house the children's exhibits is also badly needed. Other buildings will have to be provided with new roofs and painted. There will also have to be a great deal of new fencing built in place of that which is rotting out.

The State Fair should be the show window of the state, and in order to make it such each county should be represented by an exhibit of its products. That adequate means may be provided to defray the expenses of such exhibits, a law should be enacted empowering county commissioners to appropriate sufficient means out of the general fund of the county for that purpose. Thus it would enable those counties lying remote distance from the Fair to exhibit their products, and thereby assist in making it state wide—as the name implies. The result would be far reaching, and help to build up the Fair until it would be second to none in the Pacific Northwest and the pride of every resident of the state.

Respectfully submitted.

FRANK MEREDITH,

Secretary-Manager.

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Third Biennial Report

OF THE

Department of Agriculture

OF THE

State of Washington

TO THE

GOVERNOR

July 1, 1916, to June 30, 1918

OLYMPIA, WASH.
FRANK M. LAMBORN PUBLIC PRINTER
1918

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LETTER OF TRANSMITTAL.

STATE OF WASHINGTON,
DEPARTMENT OF AGRICULTURE.

Olympia, November 1, 1918.

To His Excellency, Ernest Lister, Governor.

Sir: Complying with the laws, I have the honor to submit herewith the Third Biennial Report of this Department, covering the period—July 1, 1916, to June 30, 1918.

Certain important subjects are brought down to date in the written portions; this information, together with all statistics concerning the period since June 30, 1918, will also be included in the next biennial report.

Respectfully submitted,
E. F. BENSON,
Commissioner of Agriculture.

ADVISORY BOARD.

Governor Ernest Lister, Chairman, Olympia, Washington.
Dr. Granville Lowther, Yakima, Washington.
Dr. Ira Cardiff, Pullman, Washington.
(Member until May, 1917.)
Acting Director Geo. Severance, Pullman, Washington.
(Member from and after May, 1917.)
Dr. H. T. Graves, Acting Commissioner, Olympia, Washington.
(Secretary until March 31, 1917.)
E. F. Benson, Commissioner, Olympia, Washington.
(Secretary from and after April 1, 1917.)

DIVISION CHIEFS.

Dairy and Livestock Division.

Dr. H. T. Graves, Chief until April 30, 1917.
Dr. R. J. Donohue, Chief from and after May 1, 1917.

Horticultural Division.

T. O. Morrison, Chief until May 19, 1917.
M. L. Dean, Chief from and after May 26, 1917.

Division of Foods, Feeds, Fertilizers, Drugs, Oils and Bakery Inspection.

J. J. Higgins, Chief of Division until deceased August 3, 1917.
Will H. Adams, Chief of Division from and after August 4, 1917.

Chemists.

Prof. C. W. Johnson, Seattle, Washington.
Prof. George A. Olson, Pullman, Washington.
Miss M. Y. Orosa, Assistant, Seattle, Washington.
Charles H. Hunt, Pullman, Washington.
Prof. R. P. Cope, Pullman, Washington.
C. G. King, Pullman, Washington.

Bacteriologists.

Mrs. Marjory Higgins, Seattle, Washington.
Dr. C. A. Magoon, Pullman, Washington.
Prof. T. J. Murray, Pullman, Washington.

Seed Analyst.

Katherine G. Stone, until April 30, 1918, Olympia, Washington.
Alex Galbraith, from and after May 7, 1918, Olympia, Washington.

Veterinary Inspectors.

Dr. J. H. Martin, Spokane, Washington.
Dr. L. C. Pelton, Seattle, Washington.

Dairy Inspectors.

G. G. Carman, Chehalis, Washington.
A. D. Fish, Seattle, Washington.
O. C. Van Houten, Seattle, Washington.
L. C. Renard, Olympia, Washington.

District Horticultural Inspectors.

P. S. Darlington, Wenatchee, Washington.
J. C. Eakle, Seattle, Washington.
I. R. Fletcher, Camas, Washington.
Henry Huff, Sumner, Washington.
E. B. Kelley, Spokane, Washington.
Harry L. Miller, Walla Walla, Washington.
E. F. Perry, Chehalis, Washington.
Luke Powell, Prosser, Washington.
F. N. Rhodes, Seattle, Washington.
C. B. Wood, Yakima, Washington.

Inspectors of Fourth Division.

Edward L. Jones, Drug Inspector, Spokane, Washington.
Geo. S. Henderson, Food Inspector, Seattle, Washington.
Harry H. Collier, Feed Inspector, South Tacoma, Washington.
Mrs. W. H. Coffin, Bakery Inspector, Tacoma, Washington.
S. P. Wilson, Chief Oil Inspector, Seattle, Washington.
I. W. Groves, Oil Inspector, Seattle, Washington.
B. M. Fowler, Oil Inspector, Spokane, Washington.
B. H. Goldstein, Oil Inspector, Portland, Oregon.

Office Force.

F. H. Gloyd, Secretary to Commissioner and Auditor of Department, Olympia, Washington.
F. Dora Criddle, Stenographer, Olympia, Washington.
Marjorie Holcomb, Stenographer, Olympia, Washington.
Muriel Newcomb, Stenographer, Olympia, Washington.

THE THIRD BIENNIAL REPORT OF THE DEPARTMENT OF AGRICULTURE OF THE STATE OF WASHINGTON.

On April 2, 1917, the undersigned was appointed to the position of Commissioner of Agriculture, succeeding Dr. H. T. Graves, former chief of the dairy and livestock division and acting commissioner of the Department. On April 3rd the following proclamation was issued by Governor Lister:

STATE OF WASHINGTON, EXECUTIVE DEPARTMENT.

A Proclamation by the Governor:

"A national crisis places upon every citizen the patriotic duty of immediately helping to sustain the United States in the action resulting from interference with our established rights and liberties.

"Equally important with the need for arms and equipment is an adequate supply of food for our nation and the countries whose people and institutions have been attacked by an autocratic government ignoring the rights of humanity.

"Proper preparedness means that energetic attention must at once be given to producing as much as possible from the land, in both the country and the city. The people of this prosperous state have the opportunity today of making a great contribution to the resources that will strengthen the nation—by each man, woman and child undertaking in an intelligent way to increase the yield of food products.

"The man on the farm can be a leader in this patriotic service, but there is hardly a person in any community without the chance to grow something for family use or the market. With the certain knowledge that all citizens will be quick to act for the good of the country, and because organized effort is essential for full service to the nation,

"Now, therefore, I, Ernest Lister, Governor of Washington, by virtue of the authority vested in me by law, do hereby call on the people of the state to co-operate in a great, agricultural preparedness campaign, and direct immediate action to be taken as follows:

"That the county auditor in each county in the state forthwith call to a meeting the county treasurer, county clerk, county agriculturist, county superintendent of schools, the chairman or a representative of the board of county commissioners, an officer from each bank at the county seat, and such other citizens as he may deem advisable, to organize by the election of a chairman and secretary, and the appointment of proper committees, for the purpose of bringing about the fullest possible food production in every part of that county.

"That the local committee in each school district of the state make arrangements for a patriotic rally to be held on Saturday, April 14th, for the purpose of planning action that will be of the most benefit to the nation from encouraging agricultural preparedness.

"That the state granges, farmers' unions, commercial clubs and all other organizations qualified to act and inspired with a patriotic purpose, be invited to join in this service.

"That the State Department of Agriculture, the state educational institutions and schools, and especially those that are serving the agriculural needs of the state, actively support this movement.

"That steps be taken by the active committees throughout the state to devise ways and means for helping anyone willing to cultivate land if assisted in securing seed, a plan suggested being for the person assisted in this way to pay at harvest time the cost of the seed or to return from the crop at least twice the amount of the seed. Or, any other plan which may seem to better suit local conditions may be adopted.

"The State of Washington is rich in resources and I appeal to all citizens of this commonwealth to take an active part in this patriotic movement that will prepare us to meet any demands that may come."

(Signed) ERNEST LISTER,
Governor of Washington.

On April 19th a mass meeting was held at Seattle, at which meeting representatives of nineteen counties of this state were present, and resolutions were adopted investing the Commissioner of Agriculture with the duty and responsibility of taking charge of the campaign of food production and conservation in this state. President E. O. Holland of the State College assigned Mr. R. B. Coglon, the county agent leader, to assist in this work.

The season for planting many crops, especially wheat, was far advanced; it was generally conceded that the best possible service to be rendered in the direction of food production and conservation was through the public press. Many newspaper interviews and public addresses were given; seventeen specially prepared articles containing between five and six hundred words each were mailed to every newspaper publication in the state during this publicity campaign. A most generous co-operation of the press and of the commercial clubs, the members of the agricultural advisory committee, state, county, and school officials and public-spirited citizens generally, resulted in prompt and active efforts of the people of this state in speeding up the food production to an extent that was hardly anticipated at the beginning of the campaign. During the season of 1917 this was the predominant work of this Department.

The effect of this campaign and the willingness of the general public to act was strikingly noticeable in the thousands of kitchen gardens on town lots, vacant and hitherto unused. The Federal Crop Estimates Bureau calculated that more than 4,000 acres of such gardens were grown. The effect was very noticeable on the fall market of an unusually large potato crop in the year 1917.

Some of these war gardens will cease at the end of the war, but very many will continue. The thrift habit once formed is likely to last. The pleasure of the outdoor occupation and the education of the young people in agriculture, dignify the town lot garden and make it a fixture that will stay.

The National Council of Defense, the State Council of Defense, the Federal Food Administration and federal food administrators in the various states were organized during the summer of 1917. Congress appropriated large sums of money to be spent by the Federal Department of Agriculture directly and in co-operation with the state colleges to increase the agricultural productiveness of the country and to aid in food and feed conservation. This particular war work during the season of 1918 was therefore carried on by these other agencies, and this Department was able to devote its entire efforts to its regular work except that it has at all times endeavored to assist in the stimulation of agricultural activities.

APPROPRIATIONS.

Following are the appropriations for the Department made by the last legislature, and which became available April 1, 1917, the beginning of the fiscal biennium:

Department of Agriculture.

Salaries and wages:		
Commissioner	$ 8,000 00	
Chief, livestock division	4,800 00	
Chief, horticultural division	3,600 00	
Chief, foods, feeds, fertilizers, drugs and oils division	3,600 00	
Clerks and stenographers	9,300 00	
Supplies, material and service	15,200 00	
Capitol outlays:		
Office furniture and equipment	800 00	

Dairy and Livestock Division.

Salary five dairy inspectors	$15,000 00	
Salaries, material and service of dairy inspectors	10,500 00	
Salary three veterinary inspectors	9,000 00	
Wages, supplies, material and service per diem inspectors	3,000 00	
Supplies, material and service of veterinary inspectors	8,000 00	
For the destruction of predatory animals to be expended by the agricultural department in conjunction with the U. S. department of agriculture	15,000 00	
Compensation for slaughter of inspected bovine animals	50,000 00	

Horticultural Division.

Salary ten inspectors	$30,000 00	
Supplies, material and service	15,000 00	

Foods, Feeds, Fertilizers, Drugs and Oils Division.

Salaries and wages	$22,200 00	
Supplies, material and service	11,800 00	
		$234,800 00

Washington State Fair.

Salaries and wages	$ 9,120 00	
Operation and maintenance	28,880 00	
Capitol outlays:		
Construction of new grandstand	20,000 00	
		58,000 00

State College of Washington.

For the extermination of coulee crickets, to be spent under the direction of the department of agriculture		2,000 00
		$294,800 00

It was not foreseen that this country would almost immediately be plunged into war and that the operating costs of the Department would be greatly increased. It has therefore been necessary to make many adjustments and retrenchments that were not contemplated at the time the legislature was in session. The salaries being paid to many employees of this Department are much below the present rates of compensation which those same employees might readily secure by accepting employment from private firms or corporations. Some of the most valuable experts in this Department have been taken by the federal government at greatly increased compensation. We feel that the continued service for the state by employees who could secure much better salaries elsewhere entitles them to commendation, and it is to be hoped that their services will be appreciated by the legislature to the extent that such reasonable increase may be granted them as to retain their services for the state and thus enable this Department to maintain the high record of efficiency which we believe is accorded to it by the general public and by all with whom we have had business relations.

Statement of fees collected during the biennium, July 1, 1916, to June 30, 1918.

Dairy and livestock division:		
Milkmen's licenses	$ 4,206 15	
Butter brands	16 50	
Stallions and Jacks licenses	1,446 40	
Registration of marks on dairy cans and tubs	100 00	
*Predatory animal skins	4,443 27	
Railroad fare refunded	16 33	
		$10,228 65
Horticultural division:		
Nursery licenses	1,675 00	
Agents' licenses	$ 242 10	
Inspection and disinfection	385 49	
Inspectors' expense refunded	6 60	
		2,309 19
Foods, feeds, fertilizers, drugs, oils and bakery inspection division:		
Oil inspection	$54,827 67	
Fees or labels for compound feeds	1,494 00	
Fines	175 00	
		56,496 67
Seed division:		
Seed inspection		39 75
Total		$69,074 26

*Total amount received from:	
Sales of skins	$5,465 59
Received prior to June 30, 1918	4,443 27
Received subsequent to June 30, 1918	1,022 32

DAIRY AND LIVESTOCK.

Attention is called to the progress made in reducing disease conditions of the dairy herds through the enforcement of the tuberculin test, so far as it has been allowed by the laws of the state and so far as means have been provided to put these laws into effect. Fifty thousand dollars was appropriated for indemnity to owners of slaughtered animals. More than half of this amount will be turned back to the state treasury unused, the reason being that not enough help was provided to cover the field. The increased expenses of the agents in the field—especially the traveling expenses, living expenses, automobile upkeep, etc.—have made it necessary to reduce the force from three veterinarians to two after October 1, 1918. The purchase of tuberculin and ear tags alone amounted to about $1,500, which was taken from the expense fund. If that money could have been taken from the $50,000 fund, it would have left sufficient money in the expense fund to have carried these three men through to April 1, 1919, but as the appropriation was made specifically to pay for slaughtered animals, it could not be used for this purpose.

It is urgently recommended that provision be made for six veterinarians on this force instead of three, as heretofore. Our recommendation would be to divide the state into five veterinary districts; these doctors working from a home base would be less expensive to the state than heretofore, because they would have no expense account when in their home towns. The idea of having the sixth man is to use him where most needed and in special emergencies.

The advantage of having men assigned to definite districts is, that they will be in closer touch with livestock sanitary conditions, and better able to prevent the introduction and spread of such diseases as sheep scab, hog cholera, glanders, and any other contagious or infectious animal disease that might be introduced in any portion of the state. They could also assist in the enforcement of stallion registration and licenses.

Federal Co-operation in Tuberculosis Eradication.

Under co-operative agreement with the United States Bureau of Animal Industry, several of the pure-bred herd owners of this state have taken advantage of the government offer to inspect their cattle, and when they are found worthy to place them on the accredited herd list of the United States department. This is especially advantageous to herd owners whose stock is likely to be shipped interstate. Recent federal legislation provides for a greater degree of co-operation than has heretofore been possible, whereby the government will co-operate with all states whose laws and appropriations will permit. Under this law the federal funds will be available to pay for one-third of the difference between the appraised value of animals destroyed as reactors and the salvage realized from the sale of the carcass, the sum not to exceed $25 for grades and $50 for purebreds. This is providing, however, that the federal government will pay no more than the state in any case. Resolutions from state granges and other agricultural institutions in this state have urged that a higher rate for compensation be fixed. If it is public policy and good business to pay any part of the losses for destroyed animals, it would seem to be only fair that a larger price should be set than $35, the maximum price heretofore allowed under our law for either grades or purebreds.

It is vitally necessary in the interest of eliminating the livestock disease of tuberculosis among cattle and in the interest of producing a healthful and cleanly milk supply especially for the babies of this state that this Department should have authority to make tuberculin tests of livestock whether the owners desire such tests to be made or not. It is necessary that the sale of tuberculin should be so regulated as to give this Department the absolute control of its use within the state. This can only be done by making it a criminal offense for any person to sell or use tuberculin in this state except upon license or authority of this Department. Abundant evidence in justification of such a law is contained in the records of the Department.

Tuberculosis eradication work could be more systematically carried on and a closer co-operation maintained with county agents in the various counties if five inspection districts shall be established instead of the roving commission of three men as heretofore practiced.

Predatory Animals.

Of the $15,000 appropriated for co-operation with the United States Bureau of Biological Survey in the campaign against predatory animals in the State of Washington, $8,173.95 was expended between the time the appropriation became available, April 1, 1917, and July 1, 1918. This appropriation was made with the understanding that the federal government would spend an equal sum of money in this state and would also provide supervising officers and take care of all the office and other overhead expense. As a matter of fact, federal funds to the amount of $15,249.18 were used to pay the salaries of trappers employed in this state during this period, and 2,151 predatory animals were killed by them.

Of the state funds expended, all except $6.15 was in payment of trapper salaries, the $6.15 being used to pay for the burlap used in shipping the furs of the animals killed.

A total of 915 animals were destroyed by trappers paid from state funds. Of this number, 770 were coyotes, 9 were bob-cats, 3 were Canadian lynxes, 1 a cross-fox, 1 an otter, 22 skunks, and 109 badgers.

The furs of these animals became the property of the state and were sold for $5,426.26. This sum of money, which is 67 per cent of the total amount of state funds expended, has been turned back into the state treasury, leaving a net cost to the state of Washington of $2,746.69.

The value of this work to the livestock interests of the state is many times greater than the cost. The United States Forest Service estimates that each coyote will in the course of a year destroy livestock to the value of $50. Many letters from stockmen in various sections of the state all testify in the highest terms to the good accomplished by the men employed in the campaign. One sheep man in the Yakima valley says that one state trapper who worked on his range during lambing season saved him $3,000, which is more than the total net cost to the state of the entire 15 months' work. He arrived at this estimate by comparing the losses sustained in 1917 with those of 1918.

Obviously, this kind of co-operation, showing such unusually favorable results to the state, would justify an increased appropriation. A $20,000 appropriation for the next biennium would not only permit of some expansion of this profitable work, providing the government saw fit to match the amount, but it would be a very positive expression of approval by this state of the very efficient manner in which these federal and state funds have been expended by Mr. E. F. Averill, the Predatory Animal Inspector for the states of Washington and Oregon. It is hoped this cooperative work may be further extended to include rats, rabbits, ground squirrels, gophers, moles, predatory hawks, and other pests.

Rabies.

This dread disease has prevailed in all the counties of eastern Washington during a portion of this biennium and in some of the counties during all the time. Three persons have died of hydrophobia, having been bitten by diseased dogs. Sixty persons have been given the Pasteur treatment by the State Health Commissioner, Dr. T. D. Tuttle, in Seattle, these having been exposed by bites of rabid dogs, cats or coyotes.

The general dog-muzzling quarantine covering all counties east of the Cascade Mountains was raised in August, 1917, because of its non-observance.

FROM NEW ZEALAND TO YAKIMA.
Imported 1918.

Romney sheep on irrigated pasture. September (N. Z. springtime) lambs.

A few months later, owing to outbreaks of rabies, and the agreement of citizens and public officials that some attention in the way of law enforcement would be paid to the order, it was again established in the counties of Kittitas, Yakima, Benton and Franklin, and is now effective in these counties.

The reason why the law is not usually enforced is because the local peace officers dislike to incur the enmity of their neighbors and friends by shooting their dogs. It would seem highly desirable to create a state officer whose duty, among other things, would be to enforce this law whenever the public need makes it desirable so to do. One good effect has resulted from the dog-muzzling quarantine order. It has given people a chance to clean up a lot of worthless curs, with or without owners, and thus has helped in the food and feed conservation as a war measure, and the economic result has been noticeable in many communities.

Sheep or Dogs.

The war needs for wool and the appeals of the Government for greater production have started a campaign for increasing the sheep in every part of this nation.

Between 1910 and 1917 the number of sheep in the United States decreased five million head, while the population of the country increased ten million during that period.

The following quotation is from a statement recently made by Lewis Penwell, Chief of the Wool Division of the War Industries Board:

> "All available wool is now taken by the government for the army and navy needs, and none is allowed for use in the manufactures for civilian purposes. Seven hundred million pounds will be required for this year's needs of the military forces, and the production of the United States is only 280 million pounds. All of this in the face of a normal consumption here of 650 million pounds yearly. Limited shipping facilities and priorities of other materials essential to winnng the war make other importations of wool difficult.
>
> "Decreased production of wool, particularly in the western part of the United States, is distinctly noticeable, but the output can be greatly increased if every farmer were to raise sheep just as he keeps poultry and hogs. Every encouragement should be put forth to induce the production of wool."

This statement was made while we were at war.

The one greatest menace to the success of the industry, especially on the small farms, is the sheep killing dog. Farmer's bulletin 935 on this subject is good. It summarizes as follows: "The dog not only kills sheep but keeps out of the sheep business men who are otherwise inclined to go into it."

"The most effective method of dealing with the sheep killing dog is through efficient legislation."

"Notable progress has been made by several states in enacting good dog laws, and others are expected to take similar action."

"Uniform state dog laws are desirable."

No livestock can be used as profitably and successfully in the burned and seeded logged-off lands of Western Washington as sheep. If the question is between the controlling of dogs and the existence of sheep, the answer should not be difficult.

Bulletins and various publications regarding sheep and other livestock have been freely distributed by this department, and inquiry of stock growers, especially beginners, is always welcome.

HORTICULTURE.

The Division of Horticulture, with the state divided into ten districts and with the counties co-operating by employing county horticultural inspectors in proportion to the horticultural resources of each county, is believed to be generally satisfactory and efficient. Certain portions of the year the work of our ten district inspectors is almost entirely regulatory or police work in maintaining the fruit standards and in protecting the market against misbranding, and against the packing of fruit below standard, and in preventing the introduction of pests. During other portions of the year these inspectors necessarily are called upon to do educational work in their respective fields in order to show the growers the methods by which clean and high grade merchantable fruit can be produced.

POTATOES.

The action of our inspectors in reference to the shipment of potatoes from California containing the tuber moth has unquestionably prevented the introduction of that dreaded potato pest up to date, in this state. We have found it necessary to enforce most rigidly the quarantine regulations vested in this department by our horticultural law, and have been obliged to return to California several carload shipments of potatoes thus infested.

IRRIGATION EXPERIMENT STATION.

It is not our function to engage in research work, but it has been necessary in the Yakima Valley because of the critical condition of the fruit industry and the lack of funds of the State College to carry on some necessary investigation. This work has been done at the request of fruit growers, farmers and county commissioners, and the expense has been borne almost entirely by Yakima County. The last legislature provided for the selection and acquiring by the State College of a site for an irrigation experiment station. Although no funds were appropriated to make the purchase, a site has been secured at no cost to the state which is easily worth, according to values of similar lands in the vicinity, not less than $10,000. If this donation is taken advantage of by the state, and an experiment station established, there will be no further need for such research work as that heretofore practiced by this department in Yakima County. Unquestionably the institution to render this public service, is the experiment station under the direction of the State College. Irrigated agriculture in the State of Washington at this time represents practically all the wealth of the counties of Yakima, Kittitas, Benton, Chelan, much of Okanogan, and large interests in many other portions of the state. Great as the irrigated wealth of the state now is, the prospects are that in the near future its importance will be enormously increased. The present and future problems incident to this feature of our state's agriculture, make this line of research and investigation one of the most attractive lines of work that can be undertaken. It includes not only the horticultural and agricultural crops grown in the irrigated sections, but also every branch of livestock production.

Coulee Crickets.

The cricket devastation in a small section of Grant County has for several years past been a very serious problem. The earliest cricket infestation of

CHARACTERISTIC YOUNG APPLE ORCHARD IN WASHINGTON.

In 1917 this state produced 4,176,000 barrels of commercial apples, being 300,000 barrels more than the combined production of the two next highest states that year (New York and Virginia). At an estimated average valuation of $3.75 a barrel (or $1.25 per box) the crop meant $15,660,000. It was 19% of the total commercial crop of the United States and 54% of the boxed apple crop. (See official report of the U. S. Bureau of Markets; Division of Crop Estimates.)

which any evidence is available is an outbreak which occurred in the late seventies in the Columbia River Canyon on the west side near Lake Chelan. Indians and white men vouch for this report.

In 1873 an outbreak of crickets, supposed to be the same species as the coulee cricket, occurred near Dayton, Wn. Other outbreaks in Moses Coulee and Grand Coulee occurred from 1892 to 1902. At Ephrata in Grant County a serious epidemic of crickets happened in 1900. They had been increasing in numbers during the two or three years previous, starting from the coulee a few miles north of Moses Lake. In 1903 the most disastrous cricket devastation the state has ever known began when the cricket armies swept up from Moses Coulee and devastated many sections of wheat on the south side of Badger Mountain. The following year—1904—the armies had increased to such an extent that they overran many hundred square miles of that part of Douglas County. This was the first year that any organized resistance was made. Approximately fifty miles of cricket fence was built with ditches and board fences, in a desperate effort to prevent the plague from sweeping the entire country. Fortunately for the country, an unseasonable freeze in the spring of 1905 following an early spring, apparently cleaned up the last vestige of this particular outbreak.

For six or eight years prior to 1916 these crickets were multiplying in the Cold Spring Canyon and Dry Coulee, both lying north of the Great Northern Railway at Stratford and Adrian. In 1916 the development was so great as to become a menace to the entire district and possibly to all of Eastern Washington. During this year the people of Grant County, under the leadership of County Agent H. W. Reaugh, adopted vigorous measures in attempting to hold or exterminate the pest. During 1916 the area covered by crickets amounted to 102 square miles lying between Hartline and Adrian. The principal method of combat pursued during both 1916 and 1917 was the construction of ditches by plowing and shoveling and digging post holes in the ditches a rod apart as traps, and the construction of many miles of board fence eight or ten inches high with a metal strip on top, this method having been borrowed from the Badger Mountain fight of 1904.

Various devices were resorted to in this conflict. Four hundred hogs were brought into the district and herded on these crickets, destroying thousands of them, but incidentally making the hogs sick. Turkeys and chickens were also experimented with, but the construction of the cricket is such that neither hogs, chickens, nor turkeys can feed on them to advantage until after the crickets have been burned or singed. In that condition they make very desirable stock feed for poultry and probably for hogs. During 1917, with all the work that could be done by Grant County, and even with the aid of a large portion of the $2,000 appropriated by the previous legislature for the purpose, the infested area was increased from 102 to 110 square miles. During the year 1917 among other devices for combating this pest probably none was more efficient than the liquid fire or gasoline torch that was used in destroying them along the fence lines and in the post holes or wherever else they were congregated in thick masses. Large amounts of poison were used. During the first two weeks of the cricket's life this was found to be very effective, but owing to the great area infested, was impracticable to apply.

The Federal Food Production Act of August 10, 1917, provided for the loaning by the federal government of trained entomologists to the various agricultural extension divisions for the purpose of assisting in the extermination of all insect pests detrimental to food production. Mr. Alfred C. Burrill was loaned to this state by the United States Bureau of Entomology, arriving in Grant County early in April. The crickets had already hatched, and it was too late to use poison effectively. Under Mr. Burrill's direction, all available help in the community was employed chiefly in building cricket fences and using torches. During the two months of April and May a hundred people were used, averaging a force of sixteen persons continuously for sixty days. During this time six distinct armies of crickets were encountered, moving as persistently in their different directions as an army of soldiers. These were all successfully conquered. It is reported that one army made six successive charges against different portions of a four-mile defense line. The devastation this year was confined to an area not exceeding ten square miles of pasture land and only one square rod of wheat was destroyed. A ninety-acre field of barley was partially damaged. In previous years several thousand acres of wheat had been destroyed in this cricket infested area, besides orchards, gardens, and pasture lands. This year twenty-four potato sacks were filled with the burned or singed bodies of crickets and taken home by different workers and fed to their poultry. These sacks were estimated to contain over one million crickets, and they did not represent half the number that were believed to have been killed.

While this pest has been visited upon Grant County, every district in Eastern Washington is jeopardized until the pest is exterminated. It is estimated that $1,000 will be sufficient to care for this work another year, providing the federal government will furnish the assistant as in the past season and stand his expenses, which would make the Government's contribution amount to from five to seven hundred dollars. Unless some general insect pest control measure is adopted it is recommended that an appropriation of $2,000 be made for this purpose because this menace affects all the farming districts of Eastern Washington, and it is not fair to throw the burden of exterminating this pest upon Grant County, which has heretofore expended in labor and cash not less than $30,000.

Alfalfa Weevil.

There are approximately 150,000 acres of alfalfa in the State of Washington, more than 100,000 acres being in the Yakima Valley. Allowing an average of five tons per acre, this crop would be 750,000 tons. It is the most valuable forage plant grown in the state. One important authority says: "The cultivation and feeding of alfalfa marks the highest development of modern agriculture. It is the preserver and the conserver of the homestead; it is one of the choicest gifts to man." It would be impossible to estimate the value of the present and prospective alfalfa crop of this 150,000 acres to the agriculture of the State of Washington, and within the next few years we may expect to see the area more than doubled in this state.

In recent years the price has ranged from $8 to $15 a ton in the stack. This year it has been $20 a ton. At that rate this year's crop is worth $15,000,000. To eliminate this wonderful crop or a large portion of it from the farms of Washington would surely be a catastrophe. This crop is now jeopardized by the possible introduction of the alfalfa weevil from the infested sections of Utah, Southern Idaho, and parts of Wyoming.

The weevil destroys the first annual cutting and greatly reduces the tonnage of the second cutting. Its first appearance in America was near Salt Lake City, Utah, in 1904. It has gradually enlarged its sphere of devastation until in 1917 it included fifteen counties in Utah, six counties in Idaho, and two counties in Wyoming.

There are portions of our state which lie in the direct avenue of commercial relations with these infested sections. Potatoes from Southern Idaho are being brought into our state every year. There are recent reports of the weevil being found in potato shipments destined for California. Six years ago they were found in carloads of Utah potatoes in the city of Butte, Mont., which fact prompted that state to issue a drastic quarantine, regulating the shipments of all Utah products into that state. California has done likewise. We are now shipping thousands of tons of alfalfa hay into this state from Idaho, and if we escape the introduction of the weevil this year, it will be little short of a miracle; yet there is no law that authorizes this department to restrict, regulate, or quarantine against such a possible calamity..

OTHER INSECT PESTS.

Losses to farm crops in the State of Washington from other insect pests amount to many millions of dollars each year. Much of this could be prevented with comparatively little expense if the control measures which have proved to be reasonably efficient and satisfactory could be applied. The barley loss from aphis during the past season is estimated at over two million bushels—approximately three million dollars. In some districts the first crop of alfalfa was a total loss as a result of aphis, and in many districts the crop was greatly reduced.

Grasshoppers.

The grasshopper devastation in the Okanogan Valley for the past three years has gone practically unchecked, and the menace is on the increase. The Government entomologist in the field, after surveying the district where the eggs had been deposited this year, estimated that seven billion eggs had been deposited, which will make the pest next year vastly worse than it was during the past season. It has been increasing since the pest struck the Okanogan Valley three or four years ago. A few hundred dollars properly expended would have destroyed this particular pest. This year the wheat losses between the towns of Molson and Chesaw amounted to twenty-five thousand bushels. This, with garden and pasture losses, amounted to over eighty thousand dollars.

Entomologists have calculated that twenty-seven grasshoppers per square yard will eat any grain or grass crop faster than it will grow; that sixteen to the square yard will eat a ton of alfalfa a day on forty acres. If the eggs now deposited in the Molson-Chesaw district all hatch, they will be able to eat 2,300 tons of wheat, alfalfa, and grass per day during from sixty to one hundred and twenty days next year.

One farmer in this district the past season spread a pound of paris green in a bait mixture which cost $1.76 total, and killed within one day six hundred thousand grasshoppers, which would have consumed within the next month at least four tons of his wheat and laid from five to twenty million more eggs for next year. It will probably cost $2,000 to fight the grasshopper pest next year in this one district. Grasshoppers in epidemic quantities have been reported from other districts in this state, but no definite information regarding them was secured.

Aphis.

The California Horticultural Commissioner collected in one year eleven tons of ladybugs, using sixteen men for about six months in the work. These were distributed throughout the state to growers of melons, beans, and other crops subject to aphis loss. They are found at certain seasons in the mountains of the Pacific Coast states in large quantities, and if properly cared for and distributed where needed, at the proper time, they constitute a great protection against the aphis pest at a very small cost. It takes twenty-two thousand ladybugs to make a pound. When some of their mountain congregating places are discovered, hundreds of pounds can be secured in a few hours.

Authority Needed.

The last legislature appropriated two thousand dollars to be paid out by this department for coulee cricket control, but unfortunately the act did not provide the necessary police power to make the expenditure efficient. If the Commissioner of Agriculture and his deputies can be clothed with authority to quarantine the infested areas and deputize and employ local citizens and equipment when such action becomes necessary to avert serious disaster, the legislative appropriation would be of vastly more value.

The alfalfa weevil heretofore mentioned is one of the scourges that may cost this state millions of dollars. We know its constant progress in the past fourteen years in Utah and other neighboring states. We know it is liable to be brought into this state even with our best preventive efforts, and more likely while we are now doing little or nothing to prevent its introduction. Our recommendation is that an appropriation be made of fifteen thousand dollars, or so much thereof as may be needed to combat insect pests on cereals, forage, fruit, and other crops, all expenditures to be made under the direction of the United States Bureau of Entomology, or other federal bureaus, working in this state in co-operation with the State College extension division.

Report Strange Bugs.

It is important that any new or unusual bugs or insect pests should be immediately reported either to the State College at Pullman or to the State Department of Agriculture at Olympia. Such a report might save great loss to the state.

SEED SECTION.

Attention is especially called to the report of the seed analyst. The war campaign during the past two years against waste and in favor of increased production of food crops has emphasized the importance of securing better seed and eliminating the waste incident to scattering noxious weeds in commercial seeds. Since the organization of this department, there has been one person employed as seed analyst who, in addition to the duties of making seed tests for purity and germination, has also examined the seed stocks in the principal business centers of the state not less than twice a year—sometimes oftener, and when violations of the law have been discovered, prosecutions have been made. Necessarily, one person traveling by train could not possibly cover the entire state with any degree of satisfaction, and more especially if that person was also required to do the laboratory work of testing and examining seed samples. The very great importance of this work requires one expert seedsman equipped with an automobile to travel through the state during all the periods of the year, when roads and weather conditions permit, visiting the small towns as well as the larger cities, for it is here that poor grades of seed are more likely to be offered for sale, and also examining fields where seed is being produced for commercial purposes. This expert can co-operate with horticultural inspectors and the county agents and the State Bureau of Farm Markets, and would be of great service to all. In addition, a seed analyst should be employed in the office to test such samples as may be sent in by farmers and seed dealers.

If it is not deemed advisable to appropriate sufficient funds to make the seed section of the State Department of Agriculture reasonably efficient and worth while, then our recommendation would be to cut out entirely that portion of our appropriation and turn over the work of analyzing and testing seeds to the State College and the State University the same as we now use the chemists of those institutions for our work.

THE FOURTH DIVISION.

Foods, Feeds, Fertilizers, Drugs, Oils and Bakery Inspection.

Examination of the report by the chief of this division will clearly indicate the value of these activities to the public health and welfare. No more important or responsible duty rests with any group of state employees than this. The public seldom realizes what protection it is getting from their services. A perusal of this report should be of general interest.

The legislation now deemed most important for this division is a law to provide a better method for enforcing the standards of stock feeds. It is not in accordance with present day practices to allow any person to grind up a combination of comparatively worthless ingredients and sell the same under a trade name without any labeling to indicate its food value. The poultry, dairy, and hog-raising industries of the state are largely dependent upon these feed manufacturers. It is only fair to say that many of the leading firms are as anxious as we are to have a definite law on this subject, because it will give them protection against the unscrupulous dealer and will enable them to buy and sell on market values, and conduct a legitimate business, alike to themselves and to the consumers.

THE STATE FAIR.

The object of all fairs is to educate and enthuse the public along agricultural lines.

"The fair stands as a unique educational force in agriculture, teaching by object lessons, and as a whole, it makes people think. A community in which a good fair is located will produce more at less expense; the same is true of the State Fair." (Report of the Kansas State Board of Agriculture.)

The Washington State Fair was organized by the legislature in 1893. In reaching its quarter of a century mark, it can claim under all the rules by which state fairs are judged that the 1917 and 1918 fairs were, each in turn, the most successful in its history. The development of the state agriculturally, the improvement of the roads by which Yakima is readily accessible during the month of September to every part of the state by automobile, the prosperity of farmers and livestock growers, the interest taken in the fair by the State College through its extension service whereby ninety-five students representing twenty-six counties of the state participated in the last fair—these things, together with the improved equipment, have contributed largely to the present success of the State Fair. The success attained is only the beginning of a much greater value, that hereafter may be expected. More counties represented, better premiums and larger exhibits of livestock and a larger representation of industries and manufactures, especially of farm tools and machinery, may be confidently looked for. The Washington State Fair sheep sale, by public auction conducted at the last two fairs, was the means of distributing $30,000 worth of high grade and pure bred sheep among the flocks of this state each year. A sale of dairy cattle might be staged on similar lines and would be of much benefit to the dairy interests as well as to the producers of good dairy stock.

The State Fair plant—the grounds and the buildings—is being constantly improved with the earnings and legislative appropriations for this institution. With the present rate of progress and with the construction of necessary buildings, the State Fair in a few years should be a self-supporting institution with a constantly increasing value to the agricultural development of the entire state. Attention is directed to the full report of the Secretary published herewith.

EMERGENCY APPROPRIATION.

If some fund could be available whereby the State Board of Finance (or some other authority) could, upon a proper showing being made, come to the relief of an unforeseen situation, the business of the state could be conducted with greatly reduced appropriations for contingencies. Unless this plan is adopted, the estimated budget for the Department of Agriculture should be increased $38,000 above the sum specified as being necessary to run the department for two years. The Agricultural Advisory Board deems it unwise to ask for certain fixed sums, because it is impossible to determine in advance the amount to be needed.

In 1914 an outbreak of foot and mouth disease in this state was fortunately averted. It easily might get started and require thousands of dollars to stamp it out. In the summer of 1918, sheep scab was discovered in the summer range in Okanogan County. Over 60,000 head were quarantined and dipped. The sheep industry is too important to the state's welfare to allow such a disease to exist. It must be eradicated, and quickly. It may require several thousand dollars to inspect, quarantine, and supervise the dipping of possibly every sheep in the state before the disease is controlled. This is not likely. We hope it has been stamped out already. But there is a menace and a real danger to the general welfare.

We have had several outbreaks of glanders among horses—a disease also communicable to man. We can never be sure that a most serious outbreak may not occur at any time.

An infestation of alfalfa weevil might be checked if handled immediately, providing funds were available and quarantine laws were adequate; but if no such funds were to be had, the resulting damage to this state would amount to millions of dollars and become a scourge to the alfalfa industry that could not be overcome.

Many other serious things may happen. It is certainly more businesslike to have a discretionary power resting with a booard consisting of the Governor, the Auditor, and the Treasurer than to make numerous appropriations for specific contingencies, none of which may arise to require any funds during the biennium.

The second year of the State Fair in the biennium is always a gamble on the weather. Fortunately, the weather at that season is usually good, but it is not fair to expect any official to assume the responsibility of insuring good weather for the state by being individually liable for any deficiency that may result from bad weather, besides being criminally liable and subject to a fine of $1,000. (See Rem., sec. 5026.)

The only alternative is to keep an idle guaranty fund of approximately $15,000, that may not be used once in ten years, to protect the Commissioner of Agriculture against the contingency of a few days of bad weather during one State Fair week in two years.

LAND SETTLEMENT.

On June 20, 1918, there was held in Seattle under the auspices of the Seattle Chamber of Commerce, and at the special instigation of the Washington Irrigation Institute, a meeting for the purpose of organizing a State Land Settlement Association to consider such activities by other states and by foreign countries, and to draft such legislation for submission to our state legislature as seemed to fit our condition. The chief object of the convention was to help in the making of successful farm homes, and in the reclamation of waste and unused land, primarily in the interest of returned soldiers and sailors who may desire such opportunities, but also for industrial war workers and other worthy persons.

The notable letter of Secretary of the Interior Franklin K. Lane to President Wilson dated May 31 had just been issued, and was accepted as the basis for the efforts of the Washington association. Your Commissioner of Agriculture was elected president of the organization, and in view of the very great agricultural importance of any such movement and with the approval of the Agricultural Advisory Board, has deemed it of sufficient importance to the state to have given considerable time to this work. The executive committee of this association consists of very representative citizens of the state, and it is hoped that such legislation may be enacted by this state as will enable us to participate on a co-operative basis with the federal government in the reclamation, improvement and settlement of the unused lands of this state, whether arid, overflowed and swamp lands, or logged-off lands.

Respectfully submitted,
E. F. BENSON,
Commissioner of Agriculture.

DAIRY AND LIVESTOCK DIVISION.

Hon. E. F. Benson,
Commissioner of Agriculture,
Olympia, Wn.

Sir: For your consideration there is submitted herewith a report of the activities of the Division of Dairy and Livestock for the biennial period ending July 1, 1918. In some cases additional data is appended, bringing the report to November 1, 1918.

The Division of Dairy and Livestock makes investigations as to the existence of infectious and contagious animal diseases, supervising the methods of eradicating the same; makes investigations as to the origin, nature and prevention of such diseases; co-operates with the United States Bureau of Animal Industry, State Board of Health, State College, Experiment Stations, Bureau of Markets and County Agents; investigates the condition and methods of improving the animal industry of the state. It has charge of the inspection of interstate shipments of livestock, the establishment of quarantines for the safeguarding of the livestock industry against disease, and through the power conferred on the Commissioner of Agriculture may slaughter diseased animals whenever the same may be necessary.

This division obtains and disseminates information relative to livestock and dairy production, collects licenses from retail milk venders and stores which retail milk.

The division maintains a corps of dairy and creamery inspectors whose duty is to inspect dairies, creameries, cheese factories, condenseries, milk plants and all places where dairy products are produced, manufactured and sold; to instruct in better methods of production and manufacture, and to recommend improvements when found necessary. Milk and cream testing is done. Milk cans are inspected and condemned when found unfit, or ordered returned to owner when being used unlawfully. Samples of milk, for chemical analysis, are taken from wagons delivering to consumers in towns and cities.

DAIRYING.

The dairy cow stands above all other farm animals in the agricultural development of this state. It is true that other farm animals have played an important part, but the cow has continued to feed the settler, and through the always ready marketable butter, milk, cream or cheese has been a source of revenue to the homemaker. No other animal produces human food so economically from the forage of the field as she. No other farm animal brings as prompt returns on the money invested as she. In the wheat belt of the state she has been the savior of many families when crops failed, and in the alfalfa-growing sections she has offered the best source of market for that wonderful forage, but in Western Washington she has reigned supreme. In this great grass country she has been the means of clearing the forest land, often providing the sustenance for the family while the land was undergoing clearing.

This has been accomplished most often with cows of mediocre ability, but, due to the better breeding of the dairy animals, the education, organization and co-operation of the men engaged in the industry, the standard of the dairy cow in this state is reaching a higher plane, until today we can truthfully boast that many of the record cows of the world are now located in this state. The mild, equable climate, the abundance of water, shade and grass are destined to make this one of the great dairy states of the nation.

The evaporated or condensed milk of the state has now a world-wide market. The quality of Washington butter and cheese is being maintained at a high standard, but much low grade butter is still being produced. It is felt, however, that changes in our present dairy laws will have a tendency to improve the quality of butter and cheese manufactured. Recognizing the need of regulatory measures and the benefits that would accrue from standardization, the following recommendations to meet the requirements are suggested:

All glassware used in connection with the Babcock Test should be standardized. Every person, before being allowed to use the Babcock Test for commercial purposes, should be licensed. Examination should be given by the Commissioner of Agriculture or his assistants.

All milk or cream not used in the manufacture of butter should be considered unwholesome when it contains more than .2 of 1 per cent of acidity and has a temperature above 60 degrees Fahr. when it leaves the farm.

All cream used in the manufacture of butter should be considered unwholesome when it contains more than .5 of 1 per cent of acidity and has bad flavors.

A law compelling the pasteurization of all cream used in the manufacture of butter.

A state laboratory equipped for chemical and bacterial work.

While there is much talk of the dairy cow going to the butcher's block, there is reason to believe that there is no need to view the matter through the eyes of an alarmist. Good dairy cows are not plentiful—never were plentiful—and there are always too many of the other kind. It is a matter of congratulation that they are now in the struggle of "the survival of the fittest" being eliminated.

Dairying is fast becoming a specialized industry and through the recent discoveries of agricultural chemists in which it has been found that milk contains growth-promoting substances which are found in nothing else it is only natural that dairy products will receive the recognition they so richly deserve.

The following dairy inspection report by G. G. Carman is herewith submitted:

Dairy Inspection Report.

"In reviewing the work of dairy inspection in Western Washington during the past two years, it is encouraging to note the marked improvement in the tendency to create better dairy products, both from commercial and sanitary standpoints.

The primary object of this work is the protection of the public health, and the time is spent mainly with the producers of dairy products in an effort to educate and instruct. Experience in the past has shown that greater results may be obtained in this manner than by the use of police power.

Owing to the present abnormal prices of labor, building material and other equipment and supplies, it has been the policy of this department to enforce more and better sanitary methods on the farms with the least possible expense for new equipment. Marked improvement has resulted in the handling of milk and milk products in the sections and dairies visited.

During the years of 1915 and 1916 the work was conducted by inspecting each dairy farm of a county before taking up the work in another county. Each dairy was located and numbered on a county map. It has been found, however, that while this method of inspection was fairly successful, it was impossible to get over each district as often as desired, and during the past two years some change has been made in this program. Owing to the vast amount of territory covered in our work and the small number of inspectors employed, a change was advisable. In the two years just passed, we have especially endeavored to take care of the complaints made and calls for assistance. We have also taken up the work from a different basis by inspecting the products offered at the various manufacturing plants, at railroad stations, and from the retail delivery wagons. In this manner the poor product was detected, and when necessary, condemned and returned to the producer. In every case where the product was found to be of poor quality, the farm producing it has been visited and instruction given as to the better care of milk and cream. This method of working has given good results with a minimum of expense.

The milk supply of the smaller cities has also received considerable attention by this department during the past two years. The larger cities, having their own local inspectors, have been able to take care of their own supply, but in numerous instances have been given help from this department, especially in the work of milk and cream scoring contests.

In the smaller cities and towns the work of inspection has devolved entirely on our inspectors. In these towns practically all milk is consumed in the raw state, and it is extremely important that such milk be as pure as possible.

As the health of the milch cow is a very important factor in the production of pure milk, some time has been spent by the inspectors in assisting veterinarians in the tuberculin testing of cows and in holding demonstrations of the lesions found in condemned animals. In this latter work a demand has been created among consumers for safer milk, and we have been able to have ordinances regulating the production and sale of milk passed in several cities.

The sterilization of milk bottles has been demanded in all places where milk is bottled. This is of prime importance because the milk bottles, being exchanged daily from one house to another, might be exposed to many disease germs and can readily become a great factor in the carrying of disease. In places where a steam boiler is not available, and where only a small number of bottles are used, the following device has been recommended: A galvanized iron tank containing a wire rack about four inches from the bottom, and equipped with a tight cover. The tank is made large enough to hold all bottles used, and may be heated from a brick arch, an oil stove or any other contrivance for heating. In using it a small amount of water is used, and a consequently small amount of fuel is necessary. The water is boiled for twenty minutes or longer. A number of these tanks are in use at the present time and are giving first-class results. As the cheapness of this sterilizer brings it within reach of all bottlers of milk, there is no excuse for the use of unsterilized bottles.

The bacterial count of milk is a great factor in determining its purity. The larger cities, with their own laboratories, have been able to secure a reduction of the bacterial count, and where these counts have been made regularly, a great improvement in the quality of the milk supply has been noted. At Camp Lewis the milk supply for the soldiers has received careful inspection. The bacterial count has here been made daily at the camp laboratory, and by this means the milk supply has been kept up to a high standard. What is being done for the health of the public in the larger cities, where a large percentage of the milk is pasteurized, and in the federal laboratories for the protection of the soldiers, where all milk is pasteurized, should be much more necessary in the smaller towns where all milk is consumed raw. In order to be able to do this, it will be necessary to have a state laboratory, a place available to the inspector at all times, where he may send samples of milk and get the benefit of the analysis.

The predominating complaint of the farmer and dairyman to this department has been in regard to the low reading of the Babcock Test from the various manufacturing plants. These complaints have been investigated by the securing of samples of milk from the complaining parties, testing and checking against the plant, and also by testing at the plant. In nearly all cases no grounds have been found for these complaints, which have undoubtedly emanated in many instances from the improper mixing of the milk or cream on the farm, the lack of taking into consideration the variations in test during the various lactative periods of the individual animals, and other similar causes.

In addition to the work enumerated above, considerable time has been spent in enforcing the provisions of an act passed by the legislature of 1915, relating to the marks and brands on milk cans, tubs and containers used in the manufacture of ice cream and the transportation of all dairy products.

This has been done by taking the cans whenever found, and where they were being used unlawfully and returning them to the rightful owners.

Owing to the necessity of economizing on many food products, together with the high prices prevailing, educational work has been carried on among the consumers of milk in an effort to impress upon them the high food values of milk and dairy products, and to show them the necessity of paying a fair price for this product. This latter phase of the propaganda has been deemed necessary at this time, when the high price of labor, feed, etc., has in many instances so greatly reduced the profit in keeping dairy cows that many farmers and dairymen have felt disposed to sell many of their animals.

G. G. CARMAN,
Dairy Inspector.

MARKET MILK.

The market milk of our cities has been improved from year to year. This has been accomplished by the demands of the people for a better quality of milk. Many of our municipalities now have health officers who are active in the promotion of this work and it has been a pleasure for this division to co-operate with them and the Dairy Division of the United States Bureau of Animal Industry.

Following is an article by C. F. Hoyt, Market Milk Specialist of the United States Bureau of Animal Industry:

CITY MILK CONTESTS.

A few years ago the public generally came to recognize the fact that the unaided individual purchaser of milk was in no position to distinguish carefully the good from the bad milk offered for sale and to secure for himself a good supply. To so distinguish good pure milk from poor and dangerous milk requires special equipment and time for investigation. Cities and states came to supply this equipment and to employ men for these investigations. Cities and states went further than this and attempted by force to require all milk on the market to meet certain standards as a minimum. By this means the purchaser of milk was afforded some protection from poor or dangerous milk and the producer of good milk was afforded some protection from his unscrupulous competitor. But within wide limits the purchaser could exercise no intelligent choice between good and poor milk and to the same extent the producer of good milk was subject to competition from the producer of poor milk.

Now two objects are sought through milk inspection—the protection of the consumer from poor and unwholesome milk and the protection of the producer from unfair competition. Some five years ago the health authorities of Seattle came to recognize the principle that there exist many grades in the quality of the milk on the market, grades ranging all the way from pure, rich, wholesome milk to that which is a poor or questionable food. With the co-operation of a representative of the Dairy Division, U. S. Department of Agriculture, they proceeded to ascertain these grades. This was done by regularly taking samples from all the various distributors and examining them chemically and bacteriologically and otherwise. At the end of a fixed period of time the values obtained on all the samples of each distributor were averaged. The results were then translated into numerical values by means of the U. S. Department of Agriculture score card.* The final score was then expressed on the basis of 100, and this score on the milk of the various distributors was published in the various newspapers.

By this procedure the consumers generally are enabled themselves to judge the quality of milk supplied by the various milkmen and to choose that which best meets their needs. By this means also justice is done the producer of good milk by having the quality of his product publicly recognized and he is thus relieved from the competition of the dirty or dishonest milkman.

This plan has been consistently followed in Seattle and has resulted in a notable improvement of the milk supply of that city. It has met with general approval and has been adopted in most of the larger Western cities. In the State of Washington the work has been carried on regularly in co-operation between the city health authorities, the State Department of Agriculture and the U. S. Dairy Division in the cities of Seattle, Spokane and Everett, and at irregular intervals in Tacoma. This plan has given excellent

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* See U. S. score card, following page.

results by furnishing the consumer a means of judging the quality of the different milks offered, by relieving the producer from the competition of unscrupulous men and by furnishing a means of locating the cause of any fault in quality. It is confidently believed that smaller communities might adopt the plan with profit to themselves.

C. F. HOYT,
Market Milk Specialist.

UNITED STATES DEPARTMENT OF AGRICULTURE,
Bureau of Animal Industry,
Dairy Division.

SCORE CARD FOR MILK.

Place ....
Class........................ Exhibit No......................

ITEM	Perfect Score	Score Allowed	Remarks
Bacteria	35	....	Bacteria found per cubic centimeter ....
Flavor and odor..................	25	....	Cowy, Bitter, Feed, Flat, Strong, ...
Visible dirt.......................	10	....	....
Fat	10	....	Per cent found.........................
Solids not fat....................	10	....	Per cent found.........................
Acidity	5	....	Per cent found.........................
Bottle and cap....................	5	....	Cap .... Bottle ....
Total......................	100	....	

Exhibitor, ...
Address, ...
(Signed).. Judge.
Date, ..., 191

REPORT OF DAIRY INSPECTORS.

July 1, 1916, to June 30, 1918.

G. G. Carman, July 1, 1916, to July 1, 1918.
A. D. Fish, July 1, 1916, to July 1, 1918.
O. C. Van Houten, May 1, 1917, to July 1, 1918.
C. S. McBride, July 1, 1916, to March 1, 1917.
E. D. Fear, October 1, 1917, to February 1, 1918.
J. C. Kyle, May 1, 1917, to October 1, 1917.
Leslie E. Kelley, January 1, 1918, to April 1, 1918.

	Carman	Fish	Van Houten.	Martin	McBride	Fear	Kyle	Kelley
Dairy inspections	1,893	158	905	120	460	586	212	
Creamery inspections	40	142	11	1	2	8	7	
Store and depot inspections	254	1,628	334	26		111	16	
Cheese factory inspections	15	25	1			1	2	
Condensed milk factories inspected	8	7	4				414	
*Samples of milk for butter-fat	309	1,181	21		8	41	80	
*Samples of cream for butter-fat	140	3,187	6			4	11	
*Samples of butter	31	122	24					
*Samples for bacteriological or chemical examination	164	90	20		18			
Milk cans inspected	19,365	10,690	1,240	280	483	822	322	3,425
Milk cans condemned	105	152	27		18	84	10	
Milk cans returned	124							
Milk cans found								470
Cans milk condemned			18					
Wagons inspected	167	27	89	29	42	34	27	
Milk trains inspected	14	4					10	
Complaints answered	86	117	30	3	4	8	4	
Orders issued	160	150	26	9	23	106	10	
Reinspections	253	238	155	8	46	63	17	
Dairies, creameries, stores, depots and factories closed	26	9	3		4			
Cows inspected	5	1		894	1	89		
Arrests	3	1	4					
Convictions	3	1	4					
Fines	$20 00		$55 00					

TOTALS

Dairy inspections	4,334
Creamery inspections	206
Store and depot inspections	2,369
Cheese factories inspected	44
Condensed milk factories inspected	433
Wagons inspected	398
Milk train inspections	28
Reinspections	780
Total inspections	8,592

Samples milk for butter-fat	1,640
Samples cream for butter-fat	3,348
Samples of butter	177
Samples for bacteriological or chemical examination	292
Total samples	5,457
Complaints answered	252
Orders issued	484

Milk cans inspected	36,627
Milk cans condemned	391
Milk cans returned	124
Milk cans found	470
Cans milk condemned	18
Dairies, creameries, stores, depots or factories closed	42
Cows inspected	990
Arrests	8
Convictions	8
Fines	$75 00

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* All samples taken were submitted to Dr. C. W. Johnson and Professor George Olson, Department Chemists, for analysis.

Names, locations and marks of ownership of firms operating under Chapter 101, Laws 1915, being an act relating to the registration of marks upon cans and tubs used in transporting dairy products:

	NAME AND LOCATION	BRAND
1.	Olympic Ice Cream Company, Tacoma	Olympic Ice Cream, Tacoma
2.	Dungeness Co-operative Creamery Co., Sequim	D. C. C. Co.
3.	Bremerton Creamery & Produce Co., Inc., Bremerton	Bremerton Creamery, Pasteurized Milk and Cream
4.	The Bradner Company, Seattle	Brass band marked "Bradner"
5.	Glendale Creamery Co., Chimacum	Glendale
6.	Purity Milk Products & Refrigerating Co., Centralia	Purity
7.	Hazelwood Company, Ltd., Spokane	Hazelwood
8.	Swift & Company, Seattle	Top red, bottom yellow, handles and top natural color
9.	Commercial Creamery Co., Spokane	Blanchard
10.	Turner & Pease Co., Seattle	T. & P. Co., Seattle
11.	A. Kristoferson, Inc., Seattle	Kristoferson
12.	Pleasant Hill Dairy, Wenatchee	Pleasant Hill Dairy
13.	Pine Creek Dairy Co., Spokane	P. C. D.
14.	The Royal Dairy Company, Bellingham	R. D. Co.
15.	Hollywood Farm, Seattle	"H" and "F" interlocked
16.	Cowlitz Valley Creamery, Castle Rock	C. V. C.
17.	Montesano Creamery Co., Montesano	M. C.
18.	The Mutual Creamery Co., Seattle	Mutual Creamery Company, Jensen Creamery Company, Klock Produce Company
19.	Mayflower Dairy, Inc., Seattle	M. F. D.
20.	Elma Creamery Co., Elma	E. C.
21.	Cascade Creamery Co., Yakima	Cascade Creamery Co., C. C. C.
22.	Brooklyn Dairy Products Co., Seattle	Brooklyn Dairy, a brass leaf representing clover leaf, N. C. D., BR D CO.
23.	The Independent Dairy, Inc., Seattle	Independent Dairy
24.	Pure Milk Dairy, Seattle	P. M. D.
25.	The Independent Dairy, Inc., Seattle	Redmond Creamery
26.	S. Stray, Seattle	Seattle D. and M. B. D.; Seattle Dairy
27.	Swift & Company, Seattle	Swift
28.	Miller Bros. Co., Tacoma	Miller Bros. Co., Tacoma
29.	Wingard Bros. & Co., Tacoma	W. B. Co., Tacoma, Wash.
30.	Coast Ice & Cold Storage Co., Everett	C. I. & C. S. Co.
31.	Lewis County Co-operative Creamery, Chehalis	L. C. Coop-Cry
32.	Broadview Dairy Co., Spokane	B. D. Co. and Broadview
33.	Royal Ice Cream Co., Tacoma	R. I. C. C.
34.	Pioneer-Alpine Dairy, Everett	P. A. D.

DAIRY STATISTICS.

Securing statistical information from retail milk dealers is an irksome task. The present law relating to this work provides that their reports of business for the fiscal year ending June 30th shall be made to this department not later than November 1st. As many of these firms are delinquent in reporting, and as the biennial report of this department must be issued at this time, it brings added work to the clerical forces to compile these figures.

In the interests of economy it is suggested that these reports be in the department not later than July 1st, and that they cover the calendar year rather than the fiscal year ending June 30th. This procedure would conform more nearly with the methods of the United States Bureau of Markets, who are charged with gathering statistical information from manufacturers of dairy products. Our reports from cheese factories, condenseries and ice cream plants are, therefore, a duplication of effort.

Following are the statistics of dairy products for the years 1917 and 1918:

TOTAL PRODUCTION OF MILK AND CREAM BY COUNTIES DURING YEAR JULY 1, 1916, TO JUNE 30, 1917.

COUNTIES	Gallons of Milk	Value of Milk	Gallons of Cream	Value of Cream	Total Value of Milk and Cream
Adams	17,810	$5,848	241	$401	$6,249
Benton	27,545	8,296	695	893	8,689
Chelan	71,766	18,111	5,916	8,226	26,337
Clallam	48,226	17,310	1,700	2,575	19,885
Columbia	2,000	600	....	....	600
Clarke	120,747	37,260	9,398	15,838	53,098
Cowlitz	37,627	10,458	502	803	11,261
Douglas	12,000	3,360	750	1,200	4,560
Ferry	14,756	4,443	680	1,232	5,675
Franklin	24,300	7,405	200	440	7,845
Grant	11,212	4,495	150	295	4,790
Grays Harbor	592,391	171,784	24,299	36,653	208,437
Jefferson	63,125	18,576	904	2,025	20,601
King	4,716,867	1,536,013	323,828	488,527	2,024,540
Kitsap	199,141	48,090	4,777	5,942	54,032
Kittitas	53,367	17,503	2,652	3,327	20,830
Klickitat	14,400	4,608	299	538	5,146
Lewis	144,503	41,789	4,000	6,077	47,866
Lincoln	32,680	11,029	1,325	975	12,004
Mason	8,000	2,240	210	330	2,570
Okanogan	27,400	6,898	1,551	2,094	8,992
Pacific	82,012	25,007	986	1,604	26,611
Pend Oreille	9,125	3,650	240	480	4,130
Pierce	987,798	329,267	65,353	84,927	414,194
Skagit	156,845	45,133	5,588	9,482	54,615
Snohomish	428,210	113,380	18,498	21,084	134,464
Spokane	1,629,209	626,093	163,151	275,893	901,986
Stevens	32,140	11,857	910	1,668	13,525
Thurston	150,292	45,332	11,072	12,331	57,663
Walla Walla	253,916	27,201	22,931	19,526	46,727
Whatcom	353,142	98,227	46,487	39,167	137,394
Whitman	73,251	22,706	3,154	5,366	28,072
Yakima	256,132	83,381	28,156	36,548	119,929
Totals	10,651,935	$3,457,350	750,603	$1,035,967	$4,493,317

TOTAL PRODUCTION OF MILK AND CREAM BY COUNTIES DURING YEAR JULY 1, 1917, TO JUNE 30, 1918.

COUNTIES	Gallons of Milk	Value of Milk	Gallons of Cream	Value of Cream	Total Value of Milk and Cream
Adams	11,078	$3,316	281	$393	$3,709
Benton	37,954	12,417	634	1,248	13,665
Chelan	87,366	29,120	7,248	9,061	38,181
Clarke	78,929	28,403	1,267	1,952	30,355
Columbia	12,625	5,640	260	728	6,368
Cowlitz	29,756	10,264	317	522	10,786
Douglas	6,750	2,025	200	320	2,345
Ferry	31,580	12,464	860	1,340	13,804
Franklin	17,911	7,074	985	1,530	8,604
Garfield	3,500	1,400	10	25	1,425
Grant	17,155	7,091	90	292	7,383
Grays Harbor	529,246	116,705	30,072	46,626	163,331
Jefferson	118.284	34,085	1,298	2,649	36,734
King	4,423,928	1,588,417	253,080	416,684	2,005,101
Kitsap	328,085	98,965	9,267	11,478	110,463
Kittitas	35,436	13,181	1,567	2,671	15,852
Klickitat	15,000	5,250	320	590	5.840
Lewis	128,871	49,661	3,558	6,682	56,343
Lincoln	21,808	8,578	295	521	9,099
Mason	18,950	6,170	100	240	6,410
Okanogan	15,265	5,736	967	1,616	7,352
Pacific	89,699	32,062	362	1,103	33.165
Pend Oreille	5,000	2,150	135	250	2,400
Pierce	1,415,372	519,745	70,945	139,919	659,664
Skagit	101,384	25,046	5.270	7,278	32,324
Snohomish	350,833	99,022	12,160	14.670	113,692
Spokane	1,686,828	751,440	211,655	323,037	1,074,477
Thurston	151,050	54,700	10,902	14,892	69,592
Walla Walla	116,135	29,766	16,110	19,428	49,194
Whatcom	209,962	71,176	62,614	63,500	134,676
Whitman	71,500	27,368	4,336	6,688	34,056
Yakima	205,099	72,043	17,264	23,998	96,041
Totals	10,372,379	$3,730,500	724,449	$1,121,932	$4,852,432

BUTTER PRODUCTION IN STATE BY COUNTIES DURING YEAR JULY 1, 1916, TO JUNE 30, 1917.

COUNTIES	Pounds of Butterfat Used	Pounds of Butter Made	Value of Butter	Pounds of Butter Exported
Adams	6,918	8,291	$3,316	....
Benton	283,304	347,220	125,248	....
Chelan	30,000	38,000	13,200	....
Clallam	725,360	903,661	330,033	....
Clarke	342,731	420,107	157,816	18,862
Columbia	2,348	2,786	1,114	....
Cowlitz	73,000	87,059	34,176	....
Ferry	102,687	127,022	50,808	60,000
Grant	74,040	88,963	30,716	....
Grays Harbor	273,510	337,595	118,303	....
Island	177,500	224,906	80,850	....
Jefferson	227,737	281,101	106,097	....
King	3,012,364	3,709,159	1,349,095	1,070,140
Kitsap	149,447	186,234	62,581	....
Kittitas	453,978	550,320	192,684	7,280
Klickitat	103,646	126,554	38,426	33,002
Lewis	521,435	649,314	225,063	....
Lincoln	38,906	51,279	18,500	27,900
Mason	54,799	67,154	24,811	....
Okanogan	285,523	471,008	162,015	12,430
Pend Oreille	56,860	71,075	24,853	....
Pierce	1,044,709	1,224,299	408,177	100,000
San Juan	88,932	105,481	50,418	....
Skagit	165,366	201,344	74,977	....
Snohomish	1,164,837	1,428,706	521,179	2,675
Spokane	1,455,270	1,824,696	629,876	228,720
Stevens	87,284	105,549	43,175	2,818
Thurston	371,857	470,977	171,396	15,000
Wahkiakum	317,742	381,782	130,764	359,988
Walla Walla	557,337	675,948	234,500	160,000
Whatcom	1,261,171	1,526,204	564,077	183,200
Whitman	83,760	103,246	31,063	....
Yakima	1,094,983	1,359,570	524,151	10,746
Totals	14,689,341	18,151,605	$6,583,477	2,292,761

BUTTER PRODUCTION IN STATE BY COUNTIES DURING YEAR JULY 1, 1917, TO JUNE 30, 1918.

COUNTIES	Pounds of Butterfat Used	Pounds of Butter Made	Value of Butter	Pounds of Butter Exported	Pounds of Butter Imported
Adams	12,100	14,987	$5,995	....	....
Benton	179,003	223,368	101,759	....	....
Chelan	34,710	42,000	19,420	....	....
Clallam	672,935	841,726	383,414	....	....
Clarke	372,624	455,238	196,343	30,595	....
Columbia	14,592	18,174	8,086	....	....
Cowlitz	185,047	225,619	144,224	64,971	....
Ferry	115,059	137,135	62,763	3,200	....
Grant	29,980	34,779	17,863	....	....
Grays Harbor	283,463	351,041	133,238	....	....
Island	238,795	288,153	126,103	....	....
Jefferson	150,666	186,240	88,334	....	....
Kitsap	129,835	176,003	69,849	....	....
King	3,133,639	3,903,491	1,754,377	1,319,616	1,896,235
Kittitas	425,063	518,164	236,082	49,300	....
Lewis	408,718	500,110	228,720	....	1,373
Lincoln	27,690	35,065	17,000	12,920	....
Mason	40,826	49,760	18,961	....	....
Okanogan	397,243	490,459	201,468	....	....
Pend Oreille	47,134	58,910	27,099	....	....
Pierce	729,570	897,255	399,430	10,000	262,800
San Juan	125,692	157,032	68,973	....	....
Skagit	1,109,702	1,339,728	658,127	....	....
Snohomish	618,194	771,078	350,656	....	....
Spokane	1,368,605	1,717,812	663,204	245,000	110,000
Stevens	98,200	122,499	55,125	....	....
Thurston	334,741	407,226	183,942	....	....
Wahkiakum	333,114	420,906	193,555	309,538	....
Walla Walla	616,000	757,600	303,000	200,000	....
Whatcom	701,507	908,046	410,461	....	....
Whitman	73,215	88,617	38,633	....	4,629
Yakima	793,157	975,031	468,424	....	....
Totals	13,800,819	17,113,252	$7,629,628	2,245,140	2,275,037

CHEESE MADE IN STATE BY COUNTIES DURING YEAR JULY 1, 1916, TO JUNE 30, 1917.

COUNTIES	Pounds	Value
Clarke	243,660	$50,859
Grays Harbor	303,277	53,323
Jefferson	229,516	44,299
King	74,021	15,963
Pacific	284,978	39,917
Skagit	211,183	48,308
Spokane	2,005	401
Snohomish	508,893	104,433
Whatcom	45,094	8,603
Whitman	273	68
Yakima	101,463	24,351
Totals	2,004,363	$390,525

CHEESE MADE IN STATE BY COUNTIES DURING YEAR JULY 1, 1917, TO JUNE 30, 1918.

COUNTIES	Pounds	Value
Clarke	319,115	$73,958
Cowlitz	3,719	893
Grays Harbor	437,817	100,497
Jefferson	175,776	37,401
Kitsap	48,592	12,148
Lewis	1,881	414
Okanogan	13,500	2,850
Pacific	127,750	31,938
Skagit	52,257	12,630
Snohomish	83,217	17,940
Spokane	57,860	13,018
Whatcom	8,349	1,837
Yakima	97,332	22,435
Totals	1,426,665	$327,950

CONDENSED MILK PRODUCED IN STATE DURING YEAR ENDING JUNE 30, 1917.

Pounds of Whole Milk Used	Cases Produced	Value	Cases Exported
205,657,654	1,844,097	$8,870,825 00	1,427,949

CONDENSED MILK PRODUCED IN STATE DURING YEAR ENDING JUNE 30, 1918.

Pounds of Whole Milk Used	Cases Produced	Value	Cases Exported
295,645,163	2,964,847	$14,632,146 00	2,210,610

TOTAL VALUE OF DAIRY PRODUCTS IN STATE, PERIOD JULY 1, 1916, TO JUNE 30, 1918.

Milk and cream	$9,345,749 00
Condensed milk	23,502,971 00
Butter	4,567,798 00
Cheese	718,484 00
By-products	322,673 00
Total	$38,457,675 00

CREAMERIES IN THE STATE OF WASHINGTON.

Adams County.

F. Frick	Othello
Ritzville Ice & Creamery Co.	Ritzville

Benton County.

Kennewick Co-operative Creamery	Kennewick
Prosser Co-operative Creamery	Prosser

Chelan County.

Leavenworth Co-operative Creamery, Inc.	Leavenworth
Pleasant Hill Dairy	Wenatchee

Clallam County.

Angeles Co-operative Creamery Co.	Port Angeles
Dungeness Co-operative Creamery Co.	Sequim
Glendale Creamery Co.	Dungeness
Glendale Creamery Co.	Forks
Washington Harbor Creamery Co.	Route 2, Sequim

Clarke County.

Brush Prairie Creamery Co.	Brush Prairie
Farmers Co-operative Creamery Co.	Camas
Jersey Creamery Co.	Vancouver
Vancouver Creamery Co.	Vancouver

Columbia County.

Dayton Creamery & Ice Works	Dayton

Cowlitz County.

Cowlitz Valley Creamery Co.	Castle Rock
Kelso Creamery Co.	Kelso

Ferry County.

Curlew Creamery Co.	Curlew
Eureka Farms, Inc.	Republic

Grant County.

Coulee City Co-operative Creamery	Coulee City

Grays Harbor County.

Elma Creamery	Elma
Montesano Creamery Co.	Montesano

Island County.

Island Produce Co.	Langley
Oak Harbor Co-operative Creamery Co.	Oak Harbor

Jefferson County.

Bishop Creamery Co.	Chimacum
Glendale Creamery Co.	Chimacum

King County.

Anderson Creamery Co.	Seattle
The Bradner Co.	Seattle
Dairy Products Co.	Seattle
Ellensburg Produce Co.	Seattle
Enumclaw Co-operative Creamery Co.	Enumclaw
J. L. Evans Creamery	Seattle
Hollywood Farm	Seattle
Mutual Creamery Co.	Seattle
Red Shield Creamery Co.	Seattle
Swift & Co.	Seattle
Turner & Pease	Seattle

Kitsap County.

Bremerton Creamery & Produce Co.	Bremerton
Port Orchard Produce Co.	Port Orchard
Poulsbo Creamery	Poulsbo

Kittitas County.

Consolidated Creamery Co.	Ellensburg
Ellensburg Produce Co.	Ellensburg
Kittitas Valley Creamery	Ellensburg

Klickitat County.

Trout Lake Co-operative Dairy Assn.	Trout Lake

Lewis County.

Farmers Co-operative Creamery Co.	Centralia
Lewis County Co-operative Creamery Co.	Chehalis
Pleasant Valley Creamery	Chehalis
Purity Creamery Co.	Centralia
Winlock Co-operative Creamery Co.	Winlock

Lincoln County.

Odessa Creamery	Odessa

Mason County.

Mason County Fruit Growers' Assn.	Shelton

Okanogan County.

Coast Ice & Cold Storage Co.	Winthrop
Farmers Mutual Creamery Assn.	Tonasket
Methow Valley Creamery Assn.	Twisp
Oroville Creamery	Oroville

Pend Oreille County.

Newport Creamery Assn.	Newport

Pierce County.

Lake Park Creamery	Spanaway
Miller Brothers	Tacoma
Puyallup Ice Cream Co.	Puyallup
Tacoma City Creamery	Tacoma
Olympia Ice Cream Co.	Tacoma
Roy Co-operative Creamery Assn.	Roy

San Juan County.

Richardson Creamery	Richardson
San Juan Co-operative Creamery Co.	Friday Harbor

Skagit County.

Anacortes Ice Company	Anacortes
Skagit Valley Dairy Produce Co.	Mount Vernon
West Coast Dairy Co.	Anacortes
Carnation Milk Products Co.	Mount Vernon
Finstad & Utgaard, Inc.	Conway

Snohomish County.

Arlington Co-operative Assn.	Arlington
Coast Ice & Cold Storage Co.	Everett
Fern Bluff Creamery	Monroe
Granite Falls Creamery	Granite Falls
Holcomb Dairy	Snohomish
Snohomish Creamery	Snohomish
Sultan Basin Creamery	Sultan
Snohomish Dairy Products Co.	Snohomish

Spokane County.

Commercial Creamery Co.	Spokane
Deer Park Creamery	Deer Park
Fairfield Co-operative Creamery Co.	Fairfield
The Fairmont Creamery Co.	Spokane
Hazelwood Company, Ltd.	Spokane
Pine Creek Dairy	Spokane
Broadview Dairy	Spokane

Stevens County.

Old Dominion Creamery Co.	Colville

Thurston County.

A. L. Brown Farm	Nisqually
Capital City Creamery	Olympia
Olympia Dairy Products Co.	Olympia
Tenino Creamery	Tenino
Yelm Co-operative Creamery	Yelm

Wahkiakum County.

Farmers Co-operative Produce & Warehouse Assn.	Grays River
Ferndale Creamery	Grays River
Skamokawa Farmers Creamery Assn.	Skamokawa

Walla Walla County.

Hazelwood Company, Ltd.	Walla Walla
The Walla Walla Creamery	Walla Walla

Whatcom County.

Blaine Creamery Co.	Blaine
Ferndale Creamery Co.	Ferndale
Ford Creamery Co., Inc.	Bellingham
Laurel Co-operative Creamery Assn.	Route 2, Bellingham
Lynden Creamery Co.	Lynden
Royal Dairy Co.	Bellingham

Whitman County.

Jersey Creamery Co.	Colfax
Palouse Creamery	Palouse
Tekoa Creamery Co.	Tekoa
Washington State College Creamery	Pullman

Yakima County.

The Bradner Company	Sunnyside
Cascade Creamery Co.	Yakima
Cowiche Creamery Co.	Cowiche
Yakima City Creamery	Yakima

CONDENSERIES IN THE STATE OF WASHINGTON.

Clarke County.

Henningsen Produce Co.	Washougal

Grays Harbor County.

Seattle Ice Cream Co.	Montesano

King County.

Borden Condensed Milk Co.	Auburn
Carnation Milk Products Co.	Seattle
Carnation Milk Products Co.	Carnation
Carnation Milk Products Co.	Kent
Enumclaw Condensed Milk Co.	Enumclaw
Meadowbrook Condensed Milk Co.	Issaquah

Lewis County.

Carnation Milk Products Co.	Chehalis

Skagit County.

Carnation Milk Products Co.	Sedro Woolley
Carnation Milk Products Co.	Mount Vernon
Federal Condensed Milk Co.	Mount Vernon

Snohomish County.

Carnation Milk Products Co.	Monroe
Carnation Milk Products Co.	Stanwood
Snohomish Dairy Products Co.	Snohomish

Whatcom County.

Carnation Milk Products Co.	Everson
Mount Vernon Cream Co.	Ferndale

Yakima County.

Cascade Creamery Co.	Yakima

CHEESE FACTORIES IN THE STATE OF WASHINGTON.

Clarke County.

Battleground Co-operative Dairy Assn.	Battleground
The Lackamas Valley Co-operative Dairy Assn.	Orchards

Cowlitz County.

Portland-Damascus Creamery Co.	Woodland
Woodland Cheese Factory	Woodland

Grays Harbor County.

Montesano Creamery Co.	Montesano
Oakville Co-operative Cheese Factory	Oakville
Satsop Co-operative Cheese Factory	Satsop

Jefferson County.

Bishop Creamery Co.	Chimacum
Glendale Creamery Co.	Chimacum
Glendale Creamery Co.	Center

Kitsap County.

Silverdale Poultry Assn.	Silverdale

Lewis County.

Vonrotz Brothers' Cheese Factory	Winlock

Pacific County.

Green Meadow Cheese Factory	South Bend

Skagit County.

Finstad & Utgaard	Conway
Hamilton Cheese Factory	Hamilton

Snohomish County.

Arlington Co-operative Assn.	Arlington

Whatcom County.

Royal Dairy Co.	Bellingham

Yakima County.

Cowiche Creamery	Cowiche
Mutual Creamery Co.	Toppenish

LIVESTOCK STATISTICS BY COUNTIES.

State Board of Equalization Report.

COUNTIES	STOCK, SHEEP AND GOATS				SHEEP BUCKS FOR BREEDING PURPOSES			HOGS				MULES			
	1915	1916	1917	1918	1915	1916	1917	1915	1916	1917	1918	1915	1916	1917	1918
Adams	8,299	16,530	15,551	21,079	6,737	2,284	304	7,892	6,903	5,181	5,320	1,717	1,663	1,684	1,639
Asotin	16,707	13,075	11,190	12,487	117	59	55	4,610	4,349	2,784	2,030	188	217	146	79
Benton	69,307	70,970	65,730	79,143	212	226	62	3,001	3,404	1,310	1,786	108	202	131	117
Chelan	2,166	4,413	744	1,481	....	....	404	1,633	1,545	948	1,735	209	268	252	250
Clallam	1,035	961	801	1,099	13	6	14	1,304	1,026	939	1,196	50	42	21	21
Clarke	1,311	1,672	2,960	3,324	95	105	52	3,477	2,325	2,389	2,529	97	104	119	132
Columbia	20,837	16,614	15,998	17,190	218	127	157	5,554	3,388	1,540	2,890	1,295	1,374	1,534	1,611
Cowlitz	786	796	1,081	918	7	20	14	....	919	894	1,393	6	6	16	12
Douglas	631	918	573	2,952	4	6	75	7,811	6,560	4,989	3,756	1,109	967	1,203	917
Ferry	260	245	349	994	7	15	12	853	705	909	905	127	137	116	111
Franklin	31,150	28,949	31,483	45,875	148	81	81	3,092	2,173	1,236	1,299	475	533	849	1,006
Garfield	9,852	11,901	11,695	11,330	90	108	95	9,661	7,698	4,499	4,565	405	414	464	460
Grant	38,830	51,298	41,268	52,552	157	1,001	97	5,973	4,898	3,286	3,300	566	581	563	554
Grays Harbor	1,095	1,084	1,050	1,250	6	8	80	2,183	1,824	1,497	2,303	23	9	18	12
Island	1,497	1,417	1,424	1,661	....	....	4	635	347	357	495	11	12	9	8
Jefferson	114	328	233	236	226	118	5	208	159	239	659	2	2	13	13
King	1,676	1,712	1,756	2,473	633	684	721	4,248	4,315	4,350	4,361	400	422	437	440
Kitsap	279	208	201	244	9	....	6	848	618	600	856	1	5	7	4
Kittitas	38,658	35,636	41,831	49,476	194	317	270	5,617	3,260	2,744	2,549	101	78	85	110
Klickitat	45,068	46,915	45,649	52,087	416	381	277	13,762	9,924	6,817	6.176	295	278	287	247
Lewis	2,586	2,549	2,139	2,028	9	13	4	4,315	3,414	3,665	5,594	58	69	82	100
Lincoln	1,632	1,396	1,997	2,197	212	15	85	6,633	6,909	5,315	4,797	1,845	2,025	2,098	1,795
Mason	256	302	206	330	21	....	1	328	223	210	449	3	4	2	2
Okanogan	6,037	5,846	5,552	13,484	147	106	105	6,240	5,225	3,894	6,505	442	401	336	342
Pacific	123	113	120	232	....	....	....	361	291	255	529	4	2	2	3
Pend Oreille	164	190	354	164	51	40	1	563	333	282	379	33	24	15	12
Pierce	1,078	1,376	1,393	1,120	139	151	196	3,196	3,150	3,044	4,235	74	63	105	49
San Juan	5,666	4,810	5,212	5,266	10	2	6	448	289	32[illegible]	357	....	4	4	3
Skagit	947	231	366	963	20	467	39	1,277	1,048	562	1,219	18	16	8	14
Skamania	169	66	91	712	....	4	....	229	297	183	193	11	26	13	26
Snohomish	367	342	262	271	104	68	39	2,194	1,883	1,463	2,228	46	31	30	38
Spokane	850	744	1,623	1,560	167	115	500	8,259	6,750	6,000	6,749	535	466	422	424
Stevens	4,082	6,009	8,995	7,813	....	....	610	....	4,551	330	4,809	150	188	217	218
Thurston	1,269	1,517	1,382	1,732	118	13	129	2,773	2,282	2,343	2,022	36	50	33	25
Wahkiakum	104	52	80	82	....	....	....	478	347	289	390	....	....	....	....
Walla Walla	31,589	25,832	28,964	31,473	117	127	149	7,955	6,568	6,396	7,077	3,230	3,450	3,582	4,016
Whatcom	1,581	1,088	1.053	1,375	....	....	....	2,948	1,619	1,167	1,438	39	37	43	30
Whitman	15,888	14,239	16,414	20,147	....	2	....	35,048	27,614	19,068	18,183	2,008	2,131	2,248	2,807
Yakima	105,927	121,234	114,844	138,608	1,223	1,907	2,469	22,322	17,115	18,756	22,908	468	386	327	353
Totals	469,823	498,578	482,704	587,408	11,627	8,574	7,046	187,929	156,338	116,053	140,164	16,185	16,682	17,516	17,495

LIVESTOCK STATISTICS BY COUNTIES.—Continued.

COUNTIES	HORSES																			
	One Year Old				Two Years Old				Three Years Old and Over				Work Horses				Stallions			
	1915	1916	1917	1918	1915	1916	1917	1918	1915	1916	1917	1918	1915	1916	1917	1918	1915	1916	1917	1918
Adams	1,458	1,374	1,480	1,559	1,171	1,230	1,361	1,339	1,006	1,038	1,062	1,000	7,961	8,183	9,058	9,502	62	55	56	71
Asotin	555	554	534	523	521	485	499	501	1,613	1,601	1,719	1,881	1,824	1,868	1,547	1,475	29	28	26	26
Benton	587	587	537	706	451	570	469	524	521	441	547	489	1,897	2,032	2,936	3,344	22	36	15	20
Chelan	131	103	89	104	137	131	254	133	1,622	1,988	1,014	950	1,504	1,691	1,562	2,047	5	7	13	......
Clallam	137	122	171	163	105	204	194	140	294	628	483	403	1,178	610	614	616	10	6	6	8
Clarke	334	459	173	275	356	257	217	171	298	264	178	311	4,123	3,845	3,875	3,780	17	8	7	6
Columbia	861	789	757	628	732	785	673	654	1,285	1,159	1,122	941	4,554	4,331	4,009	4,194	43	35	33	29
Cowlitz	180	176	189	197	170	145	172	143	274	158	307	306	856	865	1,303	1,195	3	1	4	5
Douglas	2,253	1,867	1,785	1,976	1,677	2,460	2,528	1,635	2,063	1,628	1,922	1,692	8,997	9,338	9,493	10,698	58	44	62	74
Ferry	265	267	350	298	246	243	392	276	1,652	1,568	1,014	1,333	247	463	731	853	9	11	6	7
Franklin	444	363	525	658	425	289	479	542	323	508	1,074	1,356	2,211	1,688	2,136	2,449	16	13	14	21
Garfield	842	971	871	701	849	793	855	897	2,468	1,884	1,988	1,899	3,108	3,517	3,473	3,890	48	49	48	43
Grant	1,199	1,174	1,423	1,544	1,519	1,097	1,721	1,472	916	923	949	1,256	5,216	5,985	6,956	7,753	21	26	30	64
Grays Harbor	160	170	169	178	146	166	194	147	686	344	297	162	1,526	1,684	1,454	1,497	6	9	5	7
Island	189	91	43	35	80	98	38	42	55	15	256	208	608	562	576	554	2	1	1	......
Jefferson	22	14	19	25	20	12	30	18	16	12	50	61	473	440	461	520	1	......	8	4
King	436	453	516	525	467	480	546	560	3,186	3,201	3,431	3,520	8,644	8,688	8,845	8,932	68	76	81	86
Kitsap	46	17	19	10	27	24	37	14	1,071	983	572	522	229	295	287	300	2	2	1	1
Kittitas	1,058	1,308	1,055	1,131	798	1,060	907	898	1,050	1,527	1,649	1,218	3,112	2,806	2,625	2,853	37	31	13	23
Klickitat	854	612	764	619	768	850	909	589	3,216	2,690	2,219	3,008	3,059	2,888	2,884	2,578	46	34	22	25
Lewis	805	840	537	523	584	576	334	276	399	368	571	736	3,557	3,410	3,880	3,478	12	10	8	8
Lincoln	2,839	2,837	2,928	2,711	2,339	2,208	2,170	2,041	2,402	2,117	1,731	1,946	14,685	14,220	14,738	15,228	52	112	73	89
Mason	66	40	60	59	51	52	89	80	279	355	225	312	442	858	263	235	2	3	......	......
Okanogan	1,530	1,848	1,755	1,783	1,965	1,877	1,846	1,871	3,487	3,673	3,596	3,298	6,773	6,044	7,046	8,308	112	122	153	165
Pacific	61	65	46	44	69	66	60	40	170	84	117	107	651	711	589	658	2	3	1	......
Pend Orielle	42	40	113	62	44	50	32	36	126	144	161	105	1,091	1,126	1,149	941	8	15	1	......
Pierce	193	195	177	143	195	201	211	195	3,271	3,297	3,345	2.758	2,527	2,501	2,549	2,527	17	15	14	18
San Juan	90	63	52	45	105	82	53	65	134	164	509	351	788	751	437	465	8	4	3	2
Skagit	227	225	141	142	300	246	232	175	504	341	601	647	2,293	2,640	2,474	2,419	19	11	9	8
Skamania	5	2	8	9	7	8	7	12	42	31	10	144	330	409	324	336	1	......	......	......
Snohomish	179	154	172	71	242	191	234	174	1,284	881	1,069	848	3,213	3,101	2,862	2,709	7	8	11	4
Spokane	1,373	1,206	1,074	1,080	1,178	1,282	1,094	906	1,823	1,776	1,251	1,224	14,406	13,898	9,915	9,234	68	52	47	42
Stevens	658	706	841	954	850	784	937	1,000	1,500	1,564	1,613	2,018	4,854	4,820	5,356	4,461	21	19	28	29
Thurston	305	281	232	178	222	189	142	166	637	378	413	666	1,914	2,023	1,663	1,687	54	24	10	10
Wahkiakum	3	9	5	10	21	8	7	5	42	15	12	1	298	297	276	278	......	......	......	......
Walla Walla	1,082	969	944	892	986	926	898	873	1,646	1,601	1.806	1,621	7,821	7,908	7,661	8,086	51	55	82	52
Whatcom	230	237	231	298	306	274	258	204	828	967	552	178	3,962	3,009	3,206	3,690	15	16	7	7
Whitman	3,623	3,290	2,894	3.016	3,385	3,140	3,017	2,758	1,998	2,099	1,648	1,977	19,844	19,941	20,940	21,686	133	107	156	112
Yakima	1,683	1,704	1,737	1,922	1,758	2,021	3,059	2,889	3,377	2,399	3,008	2,983	9,956	8,609	7,340	7,832	61	57	89	29
Totals	27,055	26,272	25,416	25,792	25,212	25,554	27,151	24,461	17,566	14,804	14,101	14,821	160,747	156,547	156,998	163,215	,143	1,105	1,093	1,108

LIVESTOCK STATISTICS BY COUNTIES.—Concluded.

COUNTIES	STOCK CATTLE												BULLS FOR BREEDING PURPOSES				MILCH COWS			
	One Year Old				Two Years Old				Three Years Old and Over											
	1915	1916	1917	1918	1915	1916	1917	1918	1915	1916	1917	1918	1915	1916	1917	1918	1915	1916	1917	1918
Adams	1,966	2,272	2,432	2,268	1,746	1,654	1,690	1,413	1,568	1,382	2,236	1,580	128	118	122	138	2,228	2,262	2,352	2,426
Asotin	1,743	1,839	2,154	2,423	1,264	1,433	1,563	1,985	1,762	2,014	2,300	3,234	97	120	112	113	813	844	844	460
Benton	1,731	1,796	1,769	1,981	841	958	1,039	1,252	505	851	479	901	70	94	69	66	2,092	2,408	2,355	2,856
Chelan	713	827	909	1,118	288	452	702	712	312	808	403	542	38	70	57	70	1,380	1,864	1,507	2,069
Clallam	1,291	1,366	1,343	1,046	985	1,052	1,109	902	193	162	484	405	133	109	123	125	3,669	3,735	3,337	3,243
Clarke	3,735	4,081	3,796	3,534	2,538	3,037	2,615	2,467	402	678	484	917	355	408	352	817	10,106	9,492	11,368	10,550
Columbia	1,623	1,602	1,891	1,806	1,260	1,281	1,307	1,270	1,401	1,849	1,846	1,934	101	114	110	87	1,507	1,513	1,240	1,144
Cowlitz	1,556	1,886	2,188	1,976	1,113	1,230	1,569	1,415	591	766	911	572	180	173	180	166	3,057	3,100	4,178	4,049
Douglas	1,807	2,160	2,427	2,355	1,199	1,705	1,452	1,421	781	689	665	1,027	71	92	673	96	2,696	2,947	3,447	2,965
Ferry	1,393	1,769	1,921	2,187	1,015	1,231	1,327	1,357	1,851	1,644	2,284	1,099	29	89	81	101	877	1,027	479	1,530
Franklin	379	423	539	867	211	253	425	642	145	296	529	1,062	16	14	16	19	528	392	388	454
Garfield	1,986	2,346	2,491	2,177	1,630	1,753	1,924	1,946	3,082	3,219	3,712	2,864	113	120	127	129	727	707	762	833
Grant	1,789	2,589	2,955	2,904	1,576	1,954	3,134	5,148	1,262	1,850	1,385	1,637	86	91	125	182	2,237	2,410	2,674	2,984
Grays Harbor	1,995	2,285	1,948	1,649	1,845	1,600	1,467	1,185	629	879	967	764	205	183	179	193	4,827	4,023	3,949	4,349
Island	647	500	616	578	340	312	531	588	20	11	139	458	40	43	43	55	2,647	2,732	2,091	1,885
Jefferson	411	372	517	552	224	177	322	387	180	88	230	103	77	65	77	80	1,657	1,565	1,689	1,866
King	3,289	3,826	3,913	3,930	2,045	2,619	2,662	2,664	2,006	2,167	2,254	2,268	603	690	711	715	21,202	22,743	23,064	23,075
Kitsap	767	673	530	537	246	232	228	265	108	76	337	278	76	72	41	42	2,844	3,248	1,860	2,184
Kittitas	4,276	7,014	5,144	10,458	2,648	2,866	3,512	3,069	2,719	3,712	3,387	4,064	243	330	252	383	3,518	4,330	3,935	3,710
Klickitat	2,781	3,235	3,830	4,028	1,809	2,257	2,385	2,412	2,002	2,445	2,641	4,848	151	137	209	183	1,973	2,041	2,217	1,526
Lewis	6,443	7,313	6,195	6,122	2,520	3,917	3,409	3,027	1,827	1,154	701	1,831	331	300	320	373	10,926	11,965	11,523	12,388
Lincoln	4,010	4,404	4,513	4,400	2,281	2,829	3,105	2,965	2,057	2,265	2,716	3,421	142	154	184	202	4,896	4,765	4,068	4,631
Mason	783	806	768	608	538	578	616	486	164	528	477	454	61	55	42	62	1,424	1,223	1,264	1,308
Okanogan	8,101	8,887	9,624	12,914	5,392	6,829	5,408	5,325	6,060	7,279	7,728	10,346	364	460	540	487	4,460	4,892	4,807	3,950
Pacific	1,282	1,088	1,065	1,060	881	915	888	959	937	1,209	909	1,357	123	123	130	188	1,902	1,984	2,142	2,474
Pend Oreille	651	826	864	808	417	464	598	482	351	428	226	175	44	53	59	48	762	850	1,151	1,181
Pierce	2,654	2,311	2,154	1,834	1,676	1,726	1,668	1,876	8,823	1,516	1,527	1,146	219	225	257	210	8,158	11,292	11,456	10,384
San Juan	737	640	637	309	479	566	440	472	132	173	280	290	78	81	61	61	1,686	1,804	1,677	1,140
Skagit	4,581	3,829	3,230	2,864	2,526	2,799	2,751	2,348	2,357	2,429	3,151	2,560	405	388	388	411	7,075	8,742	8,876	9,624
Skamania	230	274	235	306	130	201	167	165	20	35	42	159	38	23	24	32	527	671	556	596
Snohomish	5,253	5,277	4,525	4,323	4,469	3,511	3,403	3,127	892	729	1,015	1,017	511	551	542	609	13,702	13,367	14,204	15,003
Spokane	4,700	5,090	4,195	4,594	2,534	3,207	2,833	2,941	1,415	1,679	1,479	1,725	327	372	238	183	9,872	10,619	8,560	7,530
Stevens	3,939	4,662	5,479	6,324	2,364	3,057	3,291	3,822	1,688	2,267	2,837	4,504	181	390	302	218	4,961	5,024	6,146	5,452
Thurston	4,544	4,825	3,078	3,179	1,150	1,569	1,502	1,435	226	698	1,088	1,269	238	250	211	189	5,185	5,203	6,553	5,456
Wahkiakum	587	568	503	496	386	478	440	496	31	74	76	59	75	101	75	83	2,022	1,878	1,909	2,114
Walla Walla	2,363	2,465	2,470	2,458	1,533	1,706	2,273	1,803	1,646	2,445	2,490	2,122	163	182	153	145	3,198	3,079	2,060	3,301
Whatcom	4,652	4,415	4,188	4,306	3,350	3,182	3,872	3,160	1,278	1,248	2,431	2,167	488	485	456	489	11,878	11,334	10,877	14,574
Whitman	5,628	6,182	6,944	5,919	2,944	3,241	4,128	4,305	4,437	5,621	5,592	5,670	253	233	203	88	7,786	7,709	6,552	5,968
Yakima	9,440	12,939	13,305	11,788	6,481	6,141	7,901	7,890	4,641	3,929	5,199	4,678	426	476	391	444	9,401	11,978	11,554	13,189
Totals	106,456	110,654	117,285	122,998	66,878	74,417	79,142	79,570	59,566	60,807	67,677	76,587	7,219	7,917	8,206	7,727	174,965	191,822	190,861	193,915

TOTAL NUMBER OF LIVESTOCK IN THE STATE OF WASHINGTON.

State Board of Equalization Report.

	1915	1916	1917	1918
Cattle	232,400	254,881	264,104	279,159
Milch cows and bulls	182,204	199,739	198,656	201,642
Horses	261,723	254,282	254,754	259,095
Hogs	187,929	156,338	116,058	140,164
Sheep	481,450	502,152	489,750	587,408

NUMBER OF FLEECES, AVERAGE WEIGHT PER FLEECE, NUMBER OF POUNDS OF WOOL PRODUCED DURING 1916 AND 1917, AND PRICE PER POUND OF WOOL.

1917 Year Book, United States Department of Agriculture.

	1916	1917
Fleeces	594,000	594,000
Weight per fleece (pounds)	8.0	8.4
Production (pounds)	4,750,000	4,988,000
Price per pound April 1	$0.24	$0.38
Price per pound October 1	.27	.56

ESTIMATED NUMBER OF CATTLE, SHEEP, HORSES, MULES, MILCH COWS, AND HOGS.

Taken from the Monthly Crop Reports of the United States Department of Agriculture.

	1915	1916	1917	1918
WASHINGTON—				
Cattle	215,000	255,000	280,000	294,000
Sheep	546,000	568,000	585,000	661,000
Horses	311,000	308,000	300,000	309,000
Mules	15,000	17,000	19,000	19,000
Milch cows	253,000	263,000	263,000	266,000
Hogs	327,000	314,000	283,000	283,000
UNITED STATES—				
Cattle	37,067,000	39,812,000	41,689,000	43,546,000
Sheep	49,956,000	48,625,000	47,616,000	48,900,000
Horses	21,195,000	21,159,000	21,210,000	21,563,000
Mules	4,479,000	4,593,000	4,723,000	4,824,000
Milch cows	21,262,000	22,108,000	22,894,000	23,284,000
Hogs	64,618,000	67,766,000	67,503,000	71,374,000

ESTIMATED VALUE ON FARMS JANUARY 1, 1915-1918, OF CATTLE, HORSES, MULES, MILCH COWS, HOGS AND SHEEP.

Monthly Crop Report, United States Department of Agriculture.

WASHINGTON

		VALUE PER HEAD JANUARY 1							TOTAL VALUE JANUARY 1			
		1918			All Ages							
		Under 1 Year	1 Year Under 2	2 Years and Over	1918	1917	1916	1915	1918	1917	1916	1915
Cattle		$21 00	$34 50	$53 50	$36 00	$30 40	$30 30	$34 90	$10,584,000	$8.512,000	$7,726,000	$7,504,000
Horses		44 00	71 00	120 00	108 00	98 00	94 00	96 00	33,372,000	29,400,000	28,952,000	29,856,000
Mules		55 00	82 00	135 00	117 00	111 00	106 00	104 00	2,223,000	2,100,000	1,802,000	1,500,000
Milch cows		....	....	....	70 00	59 50	60 50	74 00	18,620,000	15,648 000	15,912,000	18,722,000
Hogs		....	....	....	20 00	11 10	8 50	11 10	5,660,000	3,141,000	2,669,000	3,630,000
	Lambs	Ewes 1 Yr. and Over	Wethers 1 Yr. and Over	Rams								
Sheep	$9 00	$12 00	$11 50	$21 00	11 40	7 10	5 30	4 80	7,535,000	4,154,000	3,010,000	2,621,000
Total Value (all livestock)									$77,994,000	$62,955,000	$60,071,000	$63.833.000

UNITED STATES

		VALUE PER HEAD JANUARY 1							TOTAL VALUE JANUARY 1			
		1918			All Ages							
		Under 1 Year	1 Year Under 2	2 Years and Over	1918	1917	1916	1915	1918	1917	1916	1915
Cattle		$23 45	$46 80	$55 62	$40 88	$35 92	$33 53	$33 38	$1,780,052,000	$1,497,621,000	$1.334,928,000	$1,237,376,000
Horses		45 72	70 25	114 34	104 28	102 89	101 60	103 33	2,248,626,000	2,182,307,000	2,149,786,000	2,190,102,000
Mules		57 61	86 85	13 98	128 74	118 15	113 88	112 36	621,064,000	558.006,000	522,834,000	503,271,000
Milch cows		....	....	....	70 59	59 63	53 92	55 33	1,643,689,000	1,365,251,000	1,191,955,000	1,176,838,000
Hogs		....	....	....	19 51	11 75	8 40	9 87	1,392,276,000	792,898,000	569,573,000	637,479,000
	Lambs	Ewes 1 Yr. and Over	Wethers 1 Yr. and Over	Rams								
Sheep	$9 06	$12 70	$11 25	$20 77	11 82	7 13	5.17	4 50	577,867,000	339,529,000	251,594,000	224,687,000
Total Value (all livestock)									$8,263,524,000	$6,735,613,000	$6.020,670,000	$5,969,253,000

The following list of active livestock organizations was obtained by the Extension Service of the Washington State College, through the County Agricultural Agents of the state.

NAME OF ORGANIZATION	President	Address	Secretary	Address	No. of Members	When Meetings Occur	Place of Meetings
Pierce County Milk Producers' Association	O. R. McKinney	Tacoma	J. Wilcox	Roy	150	First Mon. in June	Tacoma
Snohomish County Dairymen's Association	John Lee	Norman			200	First Sat. in Oct.	
Snohomish County Guernsey Association	J. E. Wrage	Arlington			10	At call	
Garden Jersey Club	W. G. Grimm	Arlington			15	At call	
Arlington Bull Club	Genas Farrington	Arlington			10	At call	
Granite Falls Bull Club			Floyd Chews	Arlington	3	At call	
Thompson Bull Club	Hans Thompson	Arlington			5	At call	
Sultan Bull Club	F. C. Fuchs	Sultan			4	At call	
Monroe Bull Club	E. F. Glover	Monroe			4	At call	
Stillaguamish Cow Testing Association	J. E. Wrage	Arlington					
Stanwood Cow Testing Association	J. A. Knutson	Stanwood					
Grays Harbor Dairymen's Association	Ransom Minkler	Elma	J. R. Murphy	Montesano	150	At call	
Castle Rock Cow Testing Association	G. Howard Huntington	Castle Rock	F. A. Roglin	Castle Rock	15	Annually	Castle Rock
Washington Wool Growers' Association	Tom Drumheller	Walla Walla	J. F. Sears	Prosser			Yakima
Lewis County Pure Breeders' Association	N. Hamilton	Chehalis	G. R. Walker	Chehalis	55	Semi-annually, winter and summer	Chehalis and vicinity
Grant County Cattle Growers' Association	H. V. Swan	Low Gap	C. E. Cline	Burke	75	2d Sat. each month	Low Gap
Whatcom County Jersey Cattle Club	Cyrus Gates	S. Bellingham	E. F. G. Carlyon	Bellingham	50	Annually	Bellingham
Whatcom County Guernsey Cattle Club	H. B. Douglas	Ferndale	B. C. Vander Greind	Lynden	15	Annually	Lynden or Ferndale
Ferndale Cow Testing Association	H. B. Douglas	Ferndale	T. C. Johnson	Ferndale	20	Quarterly	No set place
Whatcom County Dairymen's Association	O. P. Brown	Everson	A. H. Dahlquist	Sumas	250	Monthly	No set place
Whatcom County Poultry Association	B. S. Hillier	Bellingham	G. Van Horn	Marietta	130	Monthly	No set place
Skagit County Dairymen's Association	Wm. Kantgen	Mt. Vernon	John B. Hall	Mt. Vernon	600	At call of president	
Clinton Bull Club	F. L. Kingsley	Clinton	H. H. Williams	Clinton	12	Irregular	
Whidby Cow Testing Association	J. D. Capaan	Oak Harbor	Fred Morgan	Oak Harbor	15	Irregular	Oak Harbor
Island County Guernsey Breeders' Associat'n	John Frostad	Oak Harbor	J. M. Pratt	Oak Harbor	14	Last Sat. in Aug.	Oak Harbor
Bayview Bull Club	F. A. Harth	Langley			11	Irregular	
Clarke County Cow Testing Association	Roy Dobbs	Washougal	Geo. Anderson	Battle Ground	41	Annually	Vancouver
Riverside Bull Club			H. H. Peter	Kennewick			
Richland Bull Club			J. O. Willis	Richland			
Prosser Bull Club			Lee Ferguson	Prosser			
Paterson Bull Club			Geo. McNeally	Patterson			
Dairymen's Union	Sam Ross	Richland	J. O. Willis	Richland			
Mt. Adams Cattle Association			R. R. Kreps	Laurel			
Trout Lake Cattle Association	Ulrich Zuberbuchlar	Trout Lake	O. A. Pearson	Trout Lake			

LIVESTOCK ORGANIZATIONS.—Concluded.

NAME OF ORGANIZATION	President	Address	Secretary	Address	No. of Members	When Meetings Occurs	Place of Meetings
South Union Bull Association	Fred Heinen	Tumwater Route			7		South Union
Thurston County Dairy and Farm Products Association	D. Johnson	Little Rock	R. E. Munn	Route 1, Tumwater		5th of each month	
Walla Walla Milk Producers' Association	V. E. Brown	Route 2, Walla Walla	R. L. Ridley	Route 2, Walla Walla	27	On call February and August	Green Valley School
Walla Walla Cow Testing Association	W. E. Brown	Walla Walla	C. Baker	Walla Walla	30	January on call	County Agent's office
Pend Oreille Livestock Association	P. J. Sullivan	Cusick	E. J. Batchelor	Newport	26	Irregular	Court House, Newport
Wahkiakum County Cow Testing Associat'n	H. L. Weister	Skamokawa	F. A. Durrah	Grays River			
Cattle and Horse Raisers' Association	B. J. Batie	Twisp	G. W. Sprouse	Twisp	50	First Mon. in Apri	Twisp
Ellemeham Percheron Horse Company	S. A. DeMerchant	Oroville	Roy Bury	Tonasket	6		
Okanogan County Livestock Association	Jas. E. Forde	312 Exchange Bank Bldg., Spokane	Hugh Miller	Riverside		April each year	Okanogan
Wauconda Cattle and Horse Raisers' Association	C. H. Smith	Wauconda	B. C. Gregory	Wauconda	50	June	Wauconda Hall
Conconully Cattle and Horse Raisers' Association	J. M. Meyers	Conconully	P. H. Pinkston	Conconully	35	Quarterly	Conconully
Loop Loop Cattle and Horse Raisers' Association	John Chalmers	Okanogan	C. H. Eller	Okanogan	36	Last Sat. in Jan., April, July, Nov	Pine Grove School
Methow Valley Cattle and Horse Association	Geo. Isenhart	Winthrop	F. F. Ventzke	Winthrop		January	Winthrop
Brewster Cattle and Horse Association	Amos Tupper	Brewster	Chester Tupper	Brewster		January	Brewster
Chilliwist Cattle and Horse Association	W. E. Freis	Brewster	J. N. Moore	Olema	35	Last Friday each quarter	Park Grange Hall
Ellemeham Horse and Cattle Association	M. D. Hirschberger	Oroville	Otto Hirschberger	Oroville			
Loomis Cattle and Horse Association	S. G. Bernard	Loomis	Will Forde	Loomis		December	Loomis
Lower Methow Horse and Cattle Association	Virgil Dunbar	Pateros	Chas. Grant	Methow		January	Methow
Pine Creek Cattle and Horse Association	W. J. Utt	Riverside	Sherman Burden	Tonasket		March	Pine Creek Grange Hall
Stevens County Livestock Association	Jeo. Turner	Myers Falls	Earl Gates	Colville			
Stevens County Breeders' Club	H. T. Skeels	Addy	Mr. Lewis	Arden			
Washington State Dairymen's Association	Wm. Bishop	Chimacum	Ada B. Miller	Alaska Bldg., Seattle		On call	
Northwest Livestock Association	Thos. F. Wren	Spokane				November	Lewiston, Idaho

STALLION REGISTRATION.

The law relating to the registration of stallions and jacks was amended at the 1917 session of the legislature and became effective June 8, 1917. Provisions were made in this enactment to limit the fees that should be charged by the examining veterinarian for the inspection of stallions for soundness, and provided that they should have the endorsement of the commissioner of agriculture before undertaking this work. It was also provided that all jacks and stallions used for public service should be licensed. Previous to this law becoming effective, all licenses were issued for a period of two years, dating from the date of issuance. The present law, however, provides that all licenses shall expire on December 31st of the year following the year in which the license was issued. This will be of much assistance in checking the renewals.

The enforcement of this act resting, as it does, on the commissioner of agriculture, has frequently brought about much correspondence on the subject. If district veterinary inspectors of the department were appointed, there is reason to believe that a more careful surveillance over stallions used in public service could be had.

Following will be found a list of registry associations, and it will be found that we have included two jack associations for the reason that the standards of both are about the same. Neither association has been recognized by the National Society of Record Associations for the reason that their standards do not meet the requirements of the national association. Height, color and measurements appear to be the only requirements necessary for registration in the jack associations, whereas breeding is of first importance in the stallion registry associations recognized by this department.

Registry Associations.

Recognized as standard by the Washington Department of Agriculture:

American Trotter	American Trotting Register	American Trotting Register Association, 137 South Ashland Boulevard, Chicago, Ill.
Arabian	Stud Book of the Arabian Horse Club of America	Arabian Horse Club of America; H. K. Bush-Brown, secretary, Newburgh, N. Y.
Belgian Draft	American Register of Belgian Draft Horses	American Association of Importers and Breeders of Belgian Draft Horses; J. D. Conner, Jr., secretary, Wabash, Ind.
Cleveland Bay	American Cleveland Bay Stud Book	Cleveland Bay Society of America; R. P. Stericker, secretary, 4035 Sheridan Road, Chicago, Ill.
Clydesdale	American Clydesdale Stud Book	American Clydesdale Association; P. E. Fleming, secretary, U. S. Yards, Chicago, Ill.
French Coach	French Coach Stud Book	French Coach Horse Society of America; Duncan E. Willett, secretary, Maple avenue and Harrison street, Oak Park, Ill.

French Draft	National Register of French Draft Horses	National French Draft Horse Association of America; C. E. Stubbs, secretary, Fairfield, Ia.
German Coach, Oldenburg	German, Hanoverian and Oldenburg Coach Horse Stud Book	German, Hanoverian and Oldenburg Coach Horse Association of America; J. Crouch, secretary, Lafayette, Ind.
Hackney	American Hackney Stud Book	American Hackney Horse Society; Gurney C. Gue, secretary, 460 Fulton avenue, Hempstead, L. I., N. Y.
Jacks and Jennets	American Jack Stock Stud Book	American Breeders' Association of Jacks and Jennets, J. M. Jones, secretary, Columbia, Tenn.
Jacks and Jennets	Standard Jack and Jennet Registry of America	Standard Jack and Jennet Registry Association; Wm. E. Morton, secretary, Kansas City, Mo.
Morgan	American Morgan Register	American Morgan Register Association; T. E. Boyce, secretary, Middlebury, Vt.
Percheron	Percheron Stud Book of America	Percheron Society of America; Wayne Dinsmore, secretary, U. S. Yards, Chicago, Ill.
Percheron	The American Breeders' and Importers' Percheron Registry	The American Breeders' and Importers' Percheron Registry Co.; John A. Forney, secretary, Plainfield, Ohio.
Saddle Horse	American Saddle Horse Register	American Saddle Horse Breeders' Association; R. H. Lillard, secretary, Louisville, Ky.
Shetland Pony	American Shetland Pony Club Stud Book	American Shetland Pony Club; Miss Julia M. Wade, secretary, Lafayette, Ind.
Shire	American Shire Horse Stud Book	American Shire Horse Association; W. G. Lynch, secretary, Tonica, Ill.
Suffolk	American Suffolk Horse Stud Book	American Suffolk Horse Association; R. P. Stericker, secretary, 4035 Sheridan Road, Chicago, Ill.
Thoroughbred	American Stud Book	The Jockey Club; W. H. Rowe, Register, 18 East 41st street, New York, N. Y.
Welsh Pony and Cob	Welsh Pony and Cob Stud Book	The Welsh Pony and Cob Society of America; Miss Julia M. Wade, secretary, Lafayette, Ind.

Foreign Associations.

Recognized as standard by the Washington Department of Agriculture:

Societe le Cheval de Trait Belge; Chevalier G. H. Hynderick, secretary, Brussels, Belgium. Stud Book des Chevaux de Trait Belges.

Clydesdale Horse Society of the United Kingdom of Great Britain and Ireland; Archibald MacNeilage, secretary, 93 Hope street, Glasgow, Scotland. Clydesdale Stud Book.

Societe des Agri culteurs de France; Henri Johanet, secretary, 8 Rue d'Athens, France. Stud Book des Chevaux de Trait, Francais.

Hackney Horse Society; Frank F. Euren, secretary, 12 Hanover Square, London, W., England. Hackney Stud Book.

La Societe Hippique Percheronne de France; E. Lemaire, secretary, Nogent-le-Rotrou, France. Stud Percheron de France.

Shetland Pony Stud Book Society; R. W. Walker, secretary, 3 Golden Square, Aberdeen, Scotland. Shetland Pony Stud Book.

Shire Horse Society; J. Sloughgrove, secretary, 12 Hanover Square, London, W., England. Shire Horse Society Stud Book.

Suffolk Horse Society; Fred Smith, secretary, Rendlesham, Woodbridge, Suffolk, England. Suffolk Stud Book.

Australian Stud Book; W. C. Yuille & Sons, Melbourne, Australia. Australian Thoroughbred Stud Book.

General Stud Book; Weatherby & Sons, 6 Old Burlington street, London, W., England.

The Welsh Pony and Cob Society; John P. Bache, secretary, Knighton, Radnorshire, Wales. Welsh Pony and Cob Stud Book.

Canadian National Records; Secretary, Ottawa, Canada.

Not recognized as standard by the Washington Department of Agriculture:

American Horse Breeders' Trotting Registry Association, 161 High street, Boston, Mass.

American Horse Registry Association; N. J. Harris, secretary, Des Moines, Ia.

American Iceland Pony Club; George H. Simpson, secretary, Wheaton, Ill.

American Percheron Registry Association; S. H. Heberling, secretary, La Grange, Ill.

Belgian-American Draft Horse Registry; A. J. Myers, secretary, Lovington, Ill.

Coach and Draft Horse Association of America; Frederick Wrightman, secretary, La Crosse, Wis.

Hartman Stock Farm Registry Record Company; Adam Kramm, secretary, Columbus, Ohio.

International Consolidated Record Association; H. A. Jones, secretary, Pen Yan, N. Y.

Morrison's International Roadster Register, Des Moines, Iowa.

National Percheron Horse Breeders' Association; W. E. Phillips, secretary. (Address unknown).

National Hackney Stud Book; N. A. Randall, secretary, Crawfordsville, Ind.

The American Jack Register; W. L. DeClow, secretary, Cedar Rapids, Iowa.

The National Standard Pacing and Trotting Horse Breeders' Association; Thos. C. Parsons, registrar, Cleveland, Ohio.

United States Horse Register; J. E. Ragsdale, secretary, Gibson City, Ill.

Wagon Horse Association of America; W. B. Carpenter, president, Kansas City, Mo.

Following is a list of counties showing the number and breed of stallions that are duly licensed to be used in public service.

A directory of stallions showing the data on each individual animal will soon be issued by this department and will be available for free distribution:

COUNTIES	STALLIONS												JACKS		TOTALS		
	Percheron	Belgian	Shire	Clydesdale	French Draft	French Coach	German Coach	Arabian	Morgan	Thoroughbred	American Trotting	Grade Stallions	Pure-Bred Jacks	Grade Jacks	Total Pure-Bred	Total Grade	Grand Total
Adams	18	2	3	1	....	....	....	....	....	....	....	10	4	3	28	13	41
Asotin	5	1	1	1	....	....	....	....	....	....	....	11	....	....	8	11	19
Benton	7	....	....	....	....	....	....	....	....	....	....	4	1	2	8	6	14
Chelan	2	....	....	....	....	....	....	....	....	2	....	8	2	1	6	9	15
Clallam	2	....	....	....	....	....	....	....	....	....	....	1	....	....	2	1	3
Clarke	3	....	....	....	....	....	....	....	....	....	1	3	....	1	4	4	8
Columbia	4	4	2	....	....	....	....	....	....	....	....	3	1	2	11	5	16
Cowlitz	2	1	....	....	....	....	....	....	....	....	....	....	1	....	4	....	4
Douglas	18	4	9	2	3	1	1	....	....	....	....	33	1	5	39	38	77
Ferry	3	1	....	....	....	....	....	....	....	....	....	5	....	2	4	7	11
Franklin	7	....	3	....	....	....	....	....	....	....	....	3	1	3	11	6	17
Garfield	6	2	1	2	1	....	....	....	....	....	....	1	2	....	14	1	15
Grant	19	3	5	1	1	....	1	....	....	1	....	22	....	2	31	24	55
Grays Harbor	2	1	....	....	1	....	....	....	....	....	....	....	....	....	4	....	4
Island	1	....	....	....	....	....	....	....	....	....	....	....	...	...	1	....	1
King	3	....	1	....	....	....	....	....	....	....	....	2	...	...	4	2	6
Kitsap	1	...	....	....	....	....	....	....	....	....	....	....	...	...	1	....	1
Kittitas	10	...	1	2	2	....	....	....	1	....	1	7	...	...	17	7	24
Klickitat	4	4	1	2	4	....	....	....	....	....	....	3	3	...	18	3	21
Lewis	2	3	1	....	....	....	1	....	....	....	....	4	2	1	9	5	14
Lincoln	20	7	4	2	2	....	....	....	....	....	....	19	9	7	44	26	70
Okanogan	10	....	5	2	1	1	1	1	....	1	....	38	2	2	24	40	64
Pend Oreille	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	3	3
Pierce	....	1	....	....	....	....	....	....	....	....	....	3	....	....	1	3	4
Skagit	....	....	....	....	1	....	....	....	....	....	....	2	....	....	1	2	3
Skamania	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	1
Snohomish	2	....	....	1	....	....	....	....	....	....	....	2	....	....	3	2	5
Spokane	13	6	6	....	2	....	....	....	....	....	....	8	13	1	40	9	49
Stevens	5	2	1	....	....	....	....	....	....	....	....	16	2	1	10	17	27
Thurston	....	....	....	....	1	1	....	....	....	....	....	5	....	....	2	5	7
Walla Walla	12	1	3	....	1	....	....	....	....	....	....	7	2	....	19	7	26
Whatcom	1	3	....	....	....	....	....	....	....	....	....	1	....	....	4	1	5
Whitman	41	13	30	22	3	....	....	....	....	....	....	26	13	13	122	39	161
Yakima	17	....	4	4	1	1	....	....	1	....	....	17	8	1	31	18	49
Out of state	3	2	1	....	....	....	....	....	1	....	....	7	....	....	7	7	14
Totals	243	61	82	42	24	4	4	1	3	4	2	275	62	47	532	322	854

NUMBER OF STALLIONS AND JACKS LICENSED IN STATE SINCE ENACTMENT OF STALLION REGISTRATION LAW.

YEAR REPORT PUBLISHED	STALLIONS		JACKS	
	Pure-bred	Not Pure-bred	Pure-bred	Not Pure-bred
1913	430	307	7	67
1914	584	534	18	83
1916	506	423	20	71
1918	478	276	56	47

ANIMAL DISEASE CONTROL.

The eradication and control of contagious and infectious animal diseases in this state has taken much of the time and funds of this division. Livestock constitutes an important factor in the agricultural development of the state, and this industry must be safeguarded both from a public health and economic standpoint. As an example we have the suppression of tuberculosis, the eradication of hog cholera, the prevention of the spread of glanders, the treatment and control of sheep scab, and the institution of control measures in districts in which rabies is prevalent. Many of the communicable animal diseases are transmissible to man, and measures taken for their control are really public health measures and deserve the attention of the general public as well as those interested only in livestock.

The conservation of the livestock of the nation in the present crisis is a problem that deserves our close attention, and this division has been especially watchful in the matter of investigating suspected cases of contagious animal diseases. In this manner we have endeavored to do our part in the production of food for our people at home, our allies and our troops abroad.

The need of a state laboratory to be used in diagnosing animal diseases is often felt, as it is often impossible to correctly diagnose many of the diseases of farm animals under field conditions. This laboratory should be equipped for bacteriological, chemical and pathological work and could be used in co-operation with the State Board of Health, Public Service Commission, Industrial Insurance Commission, State College, University, and other state agencies. At the present time we are not equipped to make laboratory examinations of any material submitted to us for that purpose and are not able to make a study of obscure diseases and ascertain the cause. Because of this, unnecessary losses of livestock often occur. The laboratory diagnosis of rabies is now being done for us by the State Commissioner of Health and the veterinary department of Washington State College, but they do not have the apparatus necessary to diagnose certain other pathological conditions. Likewise, the chemists of the State University and the State College cannot handle many of the important chemical analyses so necessary in the performance of our work.

INTERSTATE TRANSPORTATION OF LIVESTOCK.

Our laws and regulations relating to the transportation interstate of cattle, horses, swine and sheep are based upon the necessity of protecting the livestock of this state from extra-state sources of infection. This is a problem requiring our constant attention. The department orders relative to these matters have been transmitted to the Chief of the United States Bureau of Animal Industry, and the veterinarians having charge of the livestock sanitary control work in the several states, and they in turn notify the veterinarians who are authorized by them to examine livestock for interstate shipment. We have found, however, that in some cases our regulations are violated both by shippers and examining veterinary inspectors. The veterinarians comprising the membership of the Northwest Livestock Sanitary Association have taken steps to abate this condition by withdrawing the authorization to inspect livestock destined to other states from veterinarians who have been guilty of wilfully violating the interstate regulations of the state to which the livestock has been destined. Shippers who have held our state regulations lightly have been watched until we have reason to believe that very few diseased animals are now being shipped to us.

At the present time—November 1, 1918—our regulations provide as follows:

Breeding and dairy cattle brought into this state shall be accompanied by health certificate, including a tuberculin test chart.

Pure-bred swine may be crated and shipped by express upon affidavit of the owner that the animals have not been affected with hog cholera and have not been exposed thereto.

Swine from public stockyards, after entering the state, must be quarantined for three weeks on the premises of the owner. A federal regulation requires the immunization by anti-hog cholera serum of all swine shipped interstate from public stockyards.

Horses must be accompanied by a health certificate.

Sheep shall be accompanied by a health certificate and an affidavit of the owner to the effect that they are not, to the best of his knowledge, affected with scabies, and have not been exposed thereto.

Livestock, intended for immediate slaughter, billed to recognized slaughtering establishments, are exempt from the foregoing regulations.

BOVINE TUBERCULOSIS.

The statistics of the department in connection with tuberculosis would indicate that we are making substantial progress in the control and ultimate eradication of this disease. The intradermal tuberculin test has been used with satisfactory results, as it was clearly demonstrated during the biennium of 1914-16 that this method of testing in the hands of a trained operator will give excellent results in eradicating the disease from the herd. While our investigations show that the disease is widespread throughout the state, there is cause for congratulation to learn that Washington is not so extensively affected as are most other states of the Union. The inspection work that has been done has indicated to us many of the centers of infection, and one of the most serious obstacles to the eradication of the disease in a community has been the absence of a specific law whereby we could apply the tuberculin test to the suspected herd without the permission of the owner. The department inspectors have, however, in many instances, applied the test after it has been conclusively proved that tubercular animals have originated from that herd.

A perusal of the appended table would indicate that the disease appears to be diminishing as rapidly as we had hoped, our results showing 3.88 per cent of diseased cattle. It is to the herds that have been under our care for the past two or more years that we must look to to show favorable results. Improvement in the condition of diseased herds cannot be expected always after the application of one test, although many cases are on record in the department in which the spread of the disease appears to have been arrested after one test and the removal of the reactors.

The prejudice of the public against the use of meats and dairy products of reacting cattle has been a serious handicap to our efforts to make headway in the matter of controlling bovine tuberculosis. This disease may be looked upon from two viewpoints; first as an economic problem affecting the financial interests of the owner, and second, as a menace to the public health. In the past it has been met by the destruction of the reacting animal, irrespective of whether or not physical symptoms of tuberculosis were exhibited. The fact that pasteurization of the milk of a clinically healthy but reacting cow would safeguard the consumer has not been considered. Tuberculin tests applied annually and the removal of the reactors does not protect the public against infected dairy products. Pasteurization renders the product reasonably safe, but it must be remembered that this method does not reach the source of the contamination. Should we draw a line between the animal which has reacted and appears healthy and the animal which clearly shows evidence of tuberculosis? Should we demand a state-wide pasteurization law, or a state-wide tuberculin test law, or both? Should we allow the use of milk from reactors under restrictions which will safeguard the public? Should we control the sale of tuberculin? These questions are of the utmost importance to the cattle interests of the state and should receive the serious consideration of our legislators. If some plan can be put in operation whereby the owner of tubercular cattle can eradicate the disease from his herd without serious financial loss, the tuberculosis problem will be solved from the economic standpoint. The indemnity feature of our law, together with the indemnity that is promised through the United States Bureau of Animal Industry, will aid materially in handling the slaughtered reactors. The problems then remaining are the disposal of the physically healthy reactor which is held in quarantine, and the handling of the herd of the man who does not allow his herd to be tested by any legal authorities. Such owners often secretly test their own herds which may be diseased and are a menace to their neighbors who are making an honest effort to rid their own cattle of this insidious disease. The holding of the physically healthy recators by the Bang method and the sale of the pasteurized products under proper district veterinary inspector surveillance will aid in solving the problem. As for the uncontrolled sale and use of tuberculin, there is ample reason to believe that this one factor has been a great hindrance to the successful control of the disease and should be stopped.

The line of work in bovine tuberculosis control has been practically the same as in the previous biennium with the exception that numbered identification tags are now being used on all animals tested. This will assist our inspectors in tracing the origin of cattle which have been previously tested by us. Another innovation is the co-operation of the tuberculosis eradication division of the Bureau of Animal Industry in the establishment of accredited herds and the testing of cattle within circumscribed areas.

The Division of Dairy and Livestock has enjoyed the hearty co-operation of the health officers of the various cities of the state and is particularly indebted to the city of Seattle, which maintains a force of four veterinarians, two of whom are bonded to this department. Because of the tuberculin tests conducted by these men, the department is relieved of the testing of cows which furnish the milk supply to Seattle.

The tuberculin testing of cattle has been continued except when interrupted by calls of a more urgent nature. Early in September of 1918 it was seen that the funds appropriated to meet the expenses of the veterinary inspectors would not admit of the continuance of this work as heretofore. A circular letter was sent to the county agents, applicants, and others interested in this work, calling their attention to the present status of this phase of our work. It was arranged that bonds be prepared for some of the local veterinarians so that the inspection and testing could be carried on under the provisions of section 3201.

Following is a list of veterinarians who are now (November 1, 1918) under bond to the department:

J. H. Martin	Spokane
H. T. Graves	Puyallup
L. C. Pelton	Seattle
C. H. Schultz	Seattle
Jas. P. Johnson	Seattle
Robert McBride	Everett
Jas. T. Seeley	Seattle
F. E. Smith	Seattle
W. W. Stewart	Chehalis
A. C. Brown	Vancouver
Cliff Ackley	Winlock

In connection with the activities of the department in the eradication of tuberculosis it is believed that the following excerpt from the report of the Chief of the Bureau of Animal Industry for the fiscal year ending June 30 is of great value to the livestock raiser:

"The observations made in the course of the year, like those made at the station for approximately a dozen years, have again emphasized the great value of scrupulous cleanliness as an aid in fighting the spread of tuberculosis among domestic animals.

"Tests made with domesticated white and wild gray mice proved that their bodies may habor enormous numbers of tubercle bacilli months after they have been permitted to eat fresh tuberculous material on only one day. The tuberculous material fed in the tests contained bovine types of tubercle bacilli, and it is not known whether human types would give similar results. The mice not only harbor the bacilli in their bodies but expel them freely through their bowels with their feces in gradually increasing numbers. Microscopic preparations of the lungs of mice made six months after they had eaten the tuberculous material often look like smears from pure cultures of tubercle bacilli. Mice which had eaten tuberculous material on only one day were fed three to five months later to a number of hogs, one hog receiving only a single mouse, another two mice, another three, and another four. All four hogs were found to be affected with tuberculosis approximately three months later, and the disease was either completely generalized or rapidly spreading.

"The tests formed a part of a series of investigations undertaken to find an explanation for the recurrence of tuberculosis in originally tuberculous, cleaned herds of cattle. Such recurrence is not uncommon, and is usually attributed to inadequate disinfection of premises or some other cause which can not be accepted as satisfactory in the light of our observations. If the common gray mouse, which is very abundant in our stables, can become a carrier of tubercle bacilli by eating tuberculous material on only a single day, and remain a carrier and disseminator of tubercle bacilli for months, it is urgently necessary in our attempts to disinfect stables which have harbored tuberculous animals to include the extermination of mice. Tubercle bacilli expelled on feed from the bodies of infected mice probably are more dangerous than those which are adherent in masses of dung on the walls of stables or those which have been trampled into the floor."

During the past biennium the United States Bureau of Animal Industry has supplied this department with 31,500 cubic centimeters of subcutaneous tuberculin, which has been distributed to local veterinarians.

During the four months following July 1st, 1918, there have been received and distributed 3,000 doses of this biological product.

INDEMNITY FROM UNITED STATES GOVERNMENT.

The 1919 agricultural appropriation bill which has been passed by congress contains an item providing for the payment of indemnities to owners of cattle destroyed on account of tuberculosis. To secure this indemnity the state in which the cattle are kept must have a working cooperative agreement and must pay an equal amount to the owner, and in no case will the federal government pay an amount in indemnity in excess of that paid by the state. The federal government will pay one-third of the difference between the appraised value of the cattle and the salvage value of the slaughtered animals. No indemnity payment is to exceed $25.00 for a grade animal or more than $50.00 for any pure-bred animal. Our state laws provide that we pay not more than $35.00 in indemnity for an animal showing lesions of tuberculosis. The compensation from the state added to that of the United States Department of Agriculture will no doubt have the effect of removing some of the opposition that we now meet in this work, but some changes are necessary in our laws relating to this disease so that the owners of destroyed tubercular cattle may receive federal aid.

SUMMARY OF TUBERCULIN TESTS PREVIOUS TO CREATION OF THE STATE DEPARTMENT OF AGRICULTURE.

	Number Herds Tested	Number Animals Tested	Number Reactors
1895-1896	3	28	1
1896-1898	1	16	5
1898-1900	9	40	8
1900-1902	14	387	71
1902-1904	36	340	40
1904-1906	97	1,456	268
1906-1908	115	2,828	352
1908-1910	316	9,310	1,317
Totals	....	14,405	2,062

1910-June 10, 1913—No report.

TUBERCULIN TESTS UNDER STATE DEPARTMENT OF AGRICULTURE.

	Number Herds Tested	Number Animals Tested	Number Reactors
June 10, 1913, to June 30, 1914	....	6,562	349
July 1, 1914, to June 10, 1915	513	11,280	1,106
June 10, 1915, to June 30, 1916	2,292	28,930	1,954
July 1, 1916, to June 30, 1918	3,866	48,852	1,896
Totals	....	95,624	5,305

TUBERCULIN TESTS CONDUCTED BY THE DEPARTMENT OF AGRICULTURE, JULY 1, 1916, TO JUNE 30, 1918.

COUNTIES	Number Herds Tested	Number Cattle Tested	Number Healthy	Number Diseased	Number Suspects	Number in Quarantine	Percentage of Diseased Cattle
Adams............	4	74	74	....	....	....	....
Asotin............	1	24	24	....	....	....	....
Benton............	174	918	914	4	....	....	.43%
Chelan............	11	119	104	15	....	5	12.6 %
Clallam............	11	183	183	....	....	....	....
Clarke............	101	1,666	1,544	114	8	6	6.84%
Columbia.........	1	1	1	....	....	....	....
Cowlitz............	17	312	304	8	....	7	2.56%
Douglas..........	1	2	2	....	....	2	....
Ferry............	....	....	....	....	....	....	....
Franklin..........	9	208	204	4	....	1	1.92%
Garfield..........	....	....	....	....	....	....	....
Grant............	73	744	715	29	....	4	3.89%
Grays Harbor....	147	1,934	1,902	28	4	2	1.44%
Island............	11	222	208	14	....	2	6.31%
Jefferson.........	14	363	351	12	....	6	3.31%
King............	666	8,867	8,346	492	29	141	5.55%
Kitsap............	6	87	70	16	1	3	18.38%
Kittitas...........	16	814	683	128	3	56	15.72%
Klickitat..........	11	32	28	4	....	....	12.50%
Lewis............	198	2,011	1,941	62	8	14	3.08%
Lincoln...........	76	662	659	3	....	....	.45%
Mason............	8	182	182	....	....	....	....
Okanogan.........	50	379	355	24	....	1	6.33%
Pacific............	16	513	508	3	2	2	.59%
Pend Oreille......	12	49	48	1	....	1	2.04%
Pierce............	231	3,912	3,769	133	5	48	3.53%
San Juan.........	2	23	22	1	....	....	4.34%
Skagit............	60	958	818	130	15	3	13.57%
Skamania.........	1	5	5	....	....	....	....
Snohomish.......	519	5,584	5,414	157	13	55	2.81%
Spokane..........	161	2,752	2,708	44	....	9	1.60%
Stevens...........	105	1,091	1,089	2	....	....	.18%
Thurston.........	264	3,322	3,213	104	5	1	3.13%
Wahkiakum......	335	4,326	4,167	159	....	31	3.67%
Walla Walla......	112	1,302	1,294	7	1	2	.54%
Whatcom.........	361	3,985	3,803	171	11	4	4.29%
Whitman.........	14	408	408	....	....	....	....
Yakima...........	67	818	796	22	....	5	2.69%
Totals......	3,866	48,852	46,851	1,896	105	411	3.88%

TESTS REPORTED BY VETERINARIANS NOT IN DEPARTMENT, JULY 1, 1916, TO JUNE 30, 1918.

COUNTIES	Number Herds Tested	Number Cattle Tested	Number Healthy	Reactors	Suspects	Percentage of Diseased Cattle
Benton	1	1	1	....	....	....
Chelan	2	10	....	10	....	00.00%
Clarke	23	373	354	19	....	5.09%
Cowlitz	7	220	212	8	....	3.64%
Douglas	1	2	....	2	....	100.00%
Franklin	1	14	13	1	....	7.14%
Grant	6	114	96	17	1	14.91%
Grays Harbor	4	104	96	8	....	7.69%
Island	8	155	142	13	....	8.39%
Jefferson	8	82	70	12	....	14.63%
King	631	7,723	7,304	399	20	5.17%
Kitsap	5	86	74	11	1	12.79%
Kittitas	11	692	570	119	3	17.19%
Klickitat	1	6	3	3	....	50.00%
Okanogan	2	6	6	....	....	....
Pend Oreille	1	2	2	....	....	....
Pierce	60	887	849	36	2	4.06%
San Juan	1	1	....	1	....	100.00%
Skagit	20	261	223	35	3	13.41%
Snohomish	25	453	381	67	5	14.79%
Spokane	18	862	843	19	....	2.20%
Stevens	2	11	11	....	....	....
Thurston	2	6	5	1	....	16.67%
Wahkiakum	2	249	225	24	....	9.64%
Whatcom	24	381	329	50	2	13.12%
Whitman	2	35	35	....	....	....
Yakima	8	63	50	13	....	20.63%
Totals	876	12,799	11,894	868	37	6.79%

TUBERCULOSIS-FREE ACCREDITED HERDS.

At a meeting of the United States Livestock Sanitary Association, held in Chicago, December 3, 4, 5, 1917, uniform methods and rules for tuberculosis-free accredited herds of pure-bred cattle were unanimously adopted by the association and representatives of pure-bred cattle breeders' associations, and were approved by the United States Bureau of Animal Industry. The work had been carried on in this state by the department, as outlined in the second biennial report. Following the adoption of uniform rules by the states and federal government, the Bureau of Animal Industry took up the work in this state in co-operation with the department. Many of our pure-bred breeders have taken advantage of the provisions of the agreement and have subjected their herds to inspection and test. A copy of this agreement is appended herewith:

Whereas, The Bureau of Animal Industry of the United States Department of Agriculture and the Washington State Department of Agriculture, for the purpose of improving the pure-bred dairy and beef breeds of cattle in the United States, encouraging recognition of the importance of maintaining herds of such cattle free from tuberculosis, and promoting the interchange of healthy pure-bred cattle, proposes, so far as available funds permit, to co-operate with the breeders of pure-bred cattle, by assisting them to eradicate tuberculosis from their herds and to maintain officially tuberculosis-free accredited herds.

Now, Therefore, In consideration of receiving assistance from the Bureau of Animal Industry and the Washington State Department of Agriculture along the lines and for the purposes specified, I, ..., do hereby agree to co-operate with the said bureau and state officials upon the following terms:

1. I will permit my entire herd, or any cattle of my herd, to be examined and to be tuberculin tested or retested at such times as are considered necessary by the bureau and state officials.

2. I will cause all animals which show physical evidence of tuberculosis to be promptly slaughtered under the United States meat inspection regulations, and I will cause the carcasses of said animals to be disposed of according to the meat inspection regulations of the Bureau of Animal Industry and state laws, based upon the lesions found upon post-mortem inspection.

3. All animals which react to the tuberculin test, but which show no physical evidence of tuberculosis, shall be removed from the herd and shall be disposed of as recommended by the bureau or state officials.

4. It is agreed that quarantined reacting bulls may be used for breeding, provided they are held upon the staff, their sexual organs properly disinfected, and the cow restrained by some suitable method so as not unnecessarily to be exposed to tuberculosis from the bull or infected premises.

5. I will cause, in all cases where the milk or milk products from quarantined reacting cows are to be used for any purposes whatever, the said milk or products to be first submitted to pasteurization at not less than 150 degrees F. for not less than twenty minutes.

6. I will cause the calves from quarantined reacting cows to be removed from their mothers at birth, to be maintained upon premises free from infection with tuberculosis, and to be fed upon the milk of cows which have passed a satisfactory tuberculin test or upon the pasteurized milk of tuberculin reactors.

7. I will allow no cattle to be associated with my herd which have not passed a tuberculin test approved by the bureau or state officials. I will keep all new cattle separated from my herd pending the application of a tuberculin test by an inspector of the said bureau or state. I will notify the proper officials immediately, giving details of the identification, characteristics, and records of tuberculin tests of any cattle which may be added to my herd.

8. I will subject any premises contaminated by tuberculous animals, as indicated by a physical examination or a tuberculin test, to a thorough cleaning and disinfection, at my expense, under the direction or supervision of the bureau or state officials. I will comply with all reasonable sanitary measures and other recommendations for the control of tuberculosis.

The following uniform methods and rules for tuberculosis-free accredited herds of pure-bred cattle, having been adopted by all parties concerned, are entered as a part of this agreement:

1. A tuberculosis-free accredited pure-bred herd is one which has been tuberculin tested by the subcutaneous method, or any other test approved by the Bureau of Animal Industry, under the supervision of the Bureau of Animal Industry, or a regularly employed veterinary inspector of the state in which co-operative tuberculosis eradication work is being conducted jointly by the United States Department of Agriculture and the state. Further, it shall be a herd in which no animal affected with tuberculosis has been found upon two annual or three semi-annual tuberculin tests, as above described, and by physical examination.

2. The entire herd, or any cattle in the herd, shall be tuberculin tested or retested at such time as is considered necessary by the federal and state authorities.

3. No cattle shall be presented for the tuberculin test which have been injected with tuberculin within sixty days immediately preceding or which have at any time reacted to a tuberculin test.

4. No herd shall be classed as an accredited herd in which tuberculosis has been found by the application of the test, as referred to in paragraph 1. until such herd has been successfully subjected to two consecutive tests with tuberculin, applied at intervals of not less than six months, the first interval dating from the time of removal of the tuberculous animal from the herd.

5. Prior to each tuberculin test satisfactory evidence of the identity of the registered animals shall be presented to the inspector. Any grade cattle

maintained in the herd, or associated with animals of the herd, shall be identified by a tag or other marking satisfactory to the state and federal officials.

6. All removals of registered cattle from the herd, either by sale, death, or slaughter, shall be reported promptly to the said state or federal officials, giving the identification of the animal and, if sold, the name and address of the person to whom transferred. If the transfer is made from the accredited herd to another accredited herd, the shipment shall be made only in properly cleaned and disinfected cars. No cattle shall be allowed to associate with the herd which have not passed a tuberculin test approved by the state and federal officials.

7. All milk and other dairy products fed to calves shall be that produced by an accredited herd, or, if from outside or unknown sources, it shall be pasteurized by heating to not less than 150 degrees F. for not less than twenty minutes.

8. All reasonable sanitary measures and other recommendations by the state and federal authorities for the control of tuberculosis shall be complied with.

9. Cattle from an accredited herd may be shipped interstate, by certificate obtained from the office of the state livestock sanitary officials of the state in which the herd is located or from the office of the Bureau of Animal Industry, without further tuberculin test for a period of one year, subject to the rules and regulations of the state of destination.

10. Strict compliance with these methods and rules shall entitle the owners of tuberculosis-free herds to a certificate, "Tuberculosis-Free Accredited Herd," to be issued by the Bureau of Animal Industry and the state livestock sanitary authority. Said certificate shall be good for one year from date of test unless revoked at an earlier date.

11. Failure on the part of owners to comply with the letter or spirit of these methods and rules shall be considered sufficient cause for immediate cancellation of co-operation with them by the state and federal officials.

My herd is composed as listed below:

Breed..................................

	Pure-Bred	Grade	Total
Females over six months old............	....	....	....
Males over six months old..............	....	....	....
Calves under six months old............	....	....	....

In witness whereof I have signed this agreement this.................day of........................., one thousand nine hundred and..............

............................., Owner.

Address.................................

Witness: ....

List of Washington herds officially accredited as free from tuberculosis and of herds that have passed successfully one test with a view to certification:

Name and Address	*Once Tested Without Reactors* *Pure-bred*	*Once Tested Without Reactors* *Grade*	*Accredited* *Pure-bred*	*Accredited* *Grade*
AYRSHIRE.				
E. M. Chandler, Yakima..........................	7	..	..	..
GUERNSEY.				
A. L. Gile, Chinook..............................	..	..	50	60
HOLSTEIN-FRIESIANS.				
A. Benson, Lynden...............................	25	..	..	..
Carnation Stock Farm, Seattle....................	350	..	..	..
Charles Peabody, Seattle.........................	90	..	..	..
A. E. Smith, Sumas..............................	100	..	..	..
Byron A. West, Mount Vernon.....................	17	..	..	..

The above names are copied from List No. 1 of the tuberculosis eradication divison, Bureau of Animal Industry, issued July 1, 1918. This list does not comprise the total number of tuberculosis-free herds of the state. It merely names those herds which have been tested under the co-operative agreement and have passed one or more tests without reactors.

GLANDERS.

Glanders continues to be reported from time to time, particularly from that portion of the state lying east of the Columbia River. The disease is usually found in its most virulent form where large numbers of horses are kept. This condition exists in the wheat belt of the state, and as a general mallein testing campaign has never been conducted, there are centers of infection scattered throughout that region.

Mallein, which is used in the diagnosis of this disease, is supplied to this department by the United States Bureau of Animal Industry. This division distributes it without charge to the practitioners of the state. The opthalmic test has been used during the past few years, as this method has been found more reliable than the old subcutaneous method and is much easier of execution than the subcutaneous, especially when applied to unbroken range horses.

Following the testing of horses for this disease, it has been the policy to immediately destroy the reactors. Wherever doubt as to the correctness of the test exists, samples of blood serum of the suspected horse are forwarded to the pathological division, United States Bureau of Animal Industry, Washington, D. C., where a complement fixation test is made and the final diagnosis sent this office.

Cleaning and disinfection of the premises are carried out under the supervision of the veterinary inspector. Contact animals are traced and the test applied.

The slaughter of many of the reacting horses often works a hardship on the farmer. This is especially true when the animals are being used during the planting and cropping seasons. In some cases it has been deemed advisable to quarantine the farm and allow the owner the use of apparently healthy horses until arrangements could be made to replace the diseased horses. A frequent complaint from horse raisers is brought about because no indemnity is allowed owners of destroyed glandered stock, while the cattle owner receives compensation for slaughtered tubercular bovine animals. It would appear that indemnity could be allowed in these cases, as it undoubtedly would have the effect of bringing about a more prompt disposal of diseased animals. This would mean that in some instances time and money now being spent on these cases would be saved.

Glanders is a serious problem in the marketing of horses. During the past two years the federal government has been purchasing horses throughout the country, but due to outbreaks of this malady in many of the remount stations, unusual precautions are now being taken to buy horses from districts in which the disease is not known to occur.

Following is a summary of the work done by the department during the biennium; also the report of cases handled since that time:

HORSES TESTED FOR GLANDERS, JULY 1, 1916, TO JUNE 30, 1918.

COUNTIES	Number Herds Tested	Number Healthy	Number Diseased	Number Suspects	Number Slaughtered	Percentage of Reactors
Adams	55	55	....	....	....	....
Benton	1	1	....	....	....	....
Clarke	1	1	....	....	....	....
Columbia	102	98	4	2	4	3.92%
Cowlitz	1	....	1	....	1	100.00%
Douglas	3	3	....	....	....	....
Garfield	36	31	5	....	5	13.89%
Grant	240	230	10	....	10	4.16%
Grays Harbor	26	20	6	....	6	23.04%
King	22	21	1	....	1	4.55%
Lewis	3	2	1	....	1	33.33%
Lincoln	135	135	....	....	....	....
Okanogan	12	11	1	....	1	8.33%
Pierce	5	1	3	1	4	80.00%
Snohomish	1	1	....	....	....	....
Spokane	1	1	....	....	....	....
Stevens	12	12	....	....	....	....
Walla Walla	480	439	36	5	41	7.50%
Whatcom	1	....	1	....	1	100.00%
Whitman	307	283	23	1	24	7.49%
Yakima	1	....	1	....	1	100.00%
Totals	1,445	1,343	93	9	100	6.44%

HORSES TESTED FOR GLANDERS, JULY 1, 1918, TO OCTOBER 1, 1918.

COUNTIES	Number Tested	Number Healthy	Number Diseased	Number Suspects	Number Slaughtered	Percentage of Reactors
Garfield	78	73	5	....	5	6.41%
Stevens	24	21	3	....	3	12.50%
Totals	102	94	8	....	8	7.84%

Horses Tested for Glanders.

Years	*Animals Tested and Examined*	*Animals Reacting and Destroyed*
1895-1896	138	15
1896-1898	34	20
1898-1900	58	46
1900-1902	156	41
1902-1904	238	24
1904-1906	967	107
1907-1908	1407	131
1909-1910	1698	256
1913-1914	1810	28
1915-1916	1234	114
1917-1918	1445	93

From July 1, 1916, to June 30, 1918, there were received from the United States Bureau of Animal Industry 8,300 doses of mallein, which have been distributed to the local veterinarians of the state.

During the period covered by the dates July 1, 1918, and November 1, 1918, there were 1,500 additional doses received and distributed.

HOG CHOLERA.

Hog cholera is the most serious disease of swine within the state. The germ which produces this disease has never been isolated, but it is known that the excretions and blood of infected swine are highly contagious and for this reason it is desirable to remove at once all well animals from those showing symptoms of disease and to have all hogs treated immediately with anti-hog cholera serum.

The losses from this disease during the first year of the biennium were light, but during the summer of 1918 there appeared to be an increase in virulence and a general spread of the disease throughout the state. Washington does not maintain an anti-hog cholera serum plant, but a contract has been made with one of the biological manufacturing firms to supply this department with anti-hog cholera serum at the rate of 1½ cents per cubic centimeter. To secure the benefits of this rate, the serum must be secured by a veterinarian who is approved by this department.

One of the accessory causes of this disease is the transportation of swine through infected stockyards. This should be borne in mind by all intending purchasers. A regulation of this department requires that hogs, which have been received from other states, having passed in transit through public stockyards, shall be held in quarantine for at least three weeks at destination.

Upon receiving a report of hog cholera, an investigation is made and if the disease is found to be present, a quarantine is isued, the owner is advised regarding the care of his animals and measures are instituted to clean up the premises.

The interest which the local practicing veterinarians have taken in this work has been conducive to much good and has in many cases resulted in the conservation of much valuable food for the nation.

*Doses of serum and virus recommended:

DOSES OF SERUM.

Weight of Swine	*Dose of Serum*
20 to 40 pounds	30 cubic centimeters
40 to 60 pounds	30 to 40 cubic centimeters
60 to 90 pounds	40 to 50 cubic centimeters
90 to 120 pounds	50 to 60 cubic centimeters
120 to 150 pounds	60 to 70 cubic centimeters
150 to 180 pounds	70 to 80 cubic centimeters
180 pounds and over	80 to 100 cubic centimeters

DOSES OF VIRUS.

Weight of Swine	*Dose of Virus*
20 to 40 pounds	1 cubic centimeter
Over 40 pounds	2 cubic centimeters

RABIES OR HYDROPHOBIA.

A conservative estimate of the livestock losses from this disease for the past three years is placed at $100,000.00.

Since the last report of this department was written, there has been a change in our laws relative to the quarantine measures affecting this disease. The legislative measures enacted during the session of 1917 are appended, but it has been found that the local authorities do not in most instances enforce the quarantine.

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*Amendment 3 to Bureau Animal Industry Order 245, effective January 2, 1918.

Heads of animals suspected of being affected with rabies have been sent to the Washington State Board of Health, Seattle, and to the veterinary department of the Washington State College, where examination has been made to determine the presence of negri bodies. These bodies when found in the nerve cells in sections of the central nervous system are diagnostic of the disease.

We are appreciative of the courtesies and help extended to us by these laboratories.

Rabies has been eradicated from many of the European countries by strict dog muzzling regulations. It is reasonable to presume that it could be held in control in this state by the enforcement of the same rules. We have, however, the coyote problem to contend with in Washington, and this factor must always be considered.

In a letter received from E. F. Averill, predatory animal inspector, United States Bureau of Biological Survey, the following information is given:

"According to the best information obtainable the outbreak of rabies among wild animals started either in Asotin County, Washington, or in Nez Perce County, Idaho, in 1910. In any event, the first rabid coyote of which we have any record appeared in Asotin County late in the fall of that year. Apparently it crossed into Wallowa County, Oregon, without spreading the disease in Washington. From the northwestern corner of Oregon it spread by means of domestic and wild animals in fan-shape until the entire Eastern Oregon and Southern Idaho section was affected. From these states it spread rapidly into California, Nevada and Utah.

It was not until the late summer or early fall of 1916 that any authentic reports of rabies were received from the State of Washington. Apparently the disease had been re-introduced into that state from Oregon by sheep dogs that accompanied flocks trailed across the state to the summer range in the national forests in Northern Washington, or by Indian dogs which accompanied their masters from the Umatilla reservation in Oregon to the Indian celebrations on the Yakima reservation in Washington early in the summer.

Though the disease has been prevalent in Oregon for a greater length of time than in any of the other western states, the heaviest losses have probably occurred in Nevada. Oregon's losses since the beginning of the outbreak have been variously estimated at from $200,000.00 to $1,000,000.00, while Nevada's loss for the winter and spring of 1915-16 is estimated at a half million."

The present methods of dog control are unsatisfactory. Aside from the rabies question, the wandering dog is the greatest menace to the farm production of wool and mutton and the development of this phase of the livestock industry. For these reasons there is need for a state or federal law licensing dogs.

Following are the law and the quarantines concerning the control of rabies promulgated by the Commissioner during the past biennium:

Be It Enacted by the Legislature of the State of Washington:

Section 1. That section 3204 of Remington & Ballinger's Annotated Codes and Statutes of Washington be amended to read as follows:

Section 3204. Quarantine shall mean the placing and restraining of any animal or animals by the owners or agents in charge of them within certain enclosures described or designated by the commissioner of agriculture, the assistant commissioner of agriculture assigned to the division of dairy and livestock or any inspector of the Department of Agriculture, in writing, and if the quarantine shall be for the purpose of preventing the spread of rabies or hydrophobia, the notice shall be published in the official newspaper of the county or counties included in the quarantined area or if there be no such newspaper then in one newspaper circulating generally within such area, and said notice shall contain a warning to the owners of dogs within the quarantined area to confine closely or to muzzle all such dogs to effectually prevent biting, and any dog found running at large in such quarantined area at any time after five days from the date of the publication of such notice or known to have been removed from or to have escaped from such area, not being muzzled as aforesaid, may be shot or otherwise destroyed, by any person without liability therefor.

Any owner or owners or agent who fails to comply with or wilfully violates or negligently allows such quarantine to be violated by the escape and running at large of quarantined animals shall be guilty of a misdemeanor.

Sec. 2. This act is necessary for the immediate preservation of the public peace, health and safety and shall take effect immediately.

Passed the Senate, January 25, 1917.
Passed the House, February 7, 1917.
Approved by the Governor, February 10, 1917.

Order No. 9.

STATE OF WASHINGTON.
DEPARTMENT OF AGRICULTURE.

To Whom It May Concern:

Whereas, The infectious disease rabies or hydrophobia has appeared in this state and is spreading with alarming rapidity, a proper safeguarding of the lives of the public demand that every effort be made to immediately check the progress of the dread disease fatal alike to livestock and human beings. As this infection is spread almost entirely by the bite of rabid dogs, it becomes of the utmost importance that every dog not closely confined be provided with and caused to wear at all times a muzzle of durable and safe construction until such time as the Commissioner of Agriculture is convinced that the danger is over.

NOTICE OF QUARANTINE.

The fact has been determined and notice is hereby given that a contagious, communicable disease, known as rabies or hydrophobia, exists in the State of Washington;

Now, Therefore, I, H. T. Graves, Acting Commissioner of Agriculture, under authority conferred by chapter 13, Laws of 1917, do hereby quarantine the entire counties of Spokane, Pend Oreille, Whitman, Garfield, Asotin, Columbia, Walla Walla, Franklin, Adams, Lincoln, Ferry, Stevens, Okanogan, Chelan, Douglas, Grant, Benton, Kittitas, Klickitat, and Yakima, and establish the following rules and regulations:

1. All dogs running at large within the boundaries of the counties herein specified shall be properly and securely muzzled so as to prevent their biting other dogs or animals.

Provided, That this rule shall not apply to dogs under leash or securely confined on the premises of their owner.

3. No dogs shall be transported or moved from the territory hereinbefore quarantined to any point outside the quarantined area unless permission has first been secured from the Commissioner or his authorized agent.

PENALTY.

Any owner, owners or agents who wilfully violate or negligently allow this quarantine or these rules and regulations to be violated shall be guilty of a misdemeanor and be punished by a fine of not more than two hundred fifty dollars ($250.00), or be imprisoned in the county jail for not more than ninety (90) days.

Peace officers, under the provisions of section 5, chapter 100, Laws of 1915, are requested to assist in the enforcement of said quarantine rules and regulations, and any person is authorized under the provisions of chapter 13, Laws of 1917, to destroy, without liability therefor, any dog not muzzled as herein provided and found running at large in the herein defined areas.

H. T. GRAVES,
Acting Commissioner of Agriculture.

Dated February 19, 1917.
Effective five days after date of publication.

Amendment No. 1 to Department of Agriculture Order No. 9, Modifying Quarantine Area.

(Effective July 9, 1917.)

The fact has been determined that the infectious disease known as rabies or hydrophobia, does not now exist in the counties of Walla Walla, Garfield, Columbia and Asotin, all being south of the Snake River.

Now, Therefore, I, E. F. Benson, Commissioner of Agriculture, under authority of law do hereby remove all quarantine restrictions heretofore placed upon said counties in the State of Washington, by the Department of Agriculture's Order No. 9, dated February 19th, 1917.

The effect of this order is to permit dogs in this area to go unmuzzled.

This amendment does not affect any part of the state east of the summit of the Cascade Mountains and north of Snake River, all of which area is still under Quarantine Order No. 9.

E. F. BENSON,
Commissioner of Agriculture.

Amendment No. 2 to Washington Department Order No. 9 releasing rabies quarantined areas. Effective August 30, 1917.

The fact has been determined by the Commissioner of Agriculture that the disease of rabies or hydrophobia is not now known to exist or exists to a slight extent only, in the State of Washington and especially in those counties of the State of Washington lying east of the Cascade Mountains and north of the Snake River, quarantined by Department Order No. 9, dated February 19, 1917, and effective five days after date of publication.

Now, Therefore, I, E. F. Benson, Commissioner of Agriculture, do release from quarantine the counties of Spokane, Pend Oreille, Whitman, Franklin, Adams, Lincoln, Ferry, Stevens, Okanogan, Chelan, Douglas, Grant, Benton, Kittitas, Klickitat and Yakima.

This amendment rescinds Order No. 9, and permits dogs in this area to go unmuzzled.

(Signed) E. F. BENSON,
Commissioner of Agriculture.

Order No. 10.

STATE OF WASHINGTON.
DEPARTMENT OF AGRICULTURE.

To Whom It May Concern:

Whereas, The infectious disease rabies or hydrophobia has appeared at various places in the counties of Kittitas, Yakima and Benton, in the State of Washington, and a proper safeguarding of the lives of the public demands that every effort be made to immediately check the progress of the dread disease, fatal alike to livestock and human beings. As this infection is spread almost entirely by the bite of rabid dogs, it becomes of the utmost importance that every dog not closely confined be provided with and caused to wear at all times a muzzle of durable and safe construction until such time as the Commissioner of Agriculture is convinced the danger is over.

NOTICE OF QUARANTINE.

The fact has been determined and notice is hereby given that a contagious, communicable disease, known as rabies or hydrophobia, exists in the State of Washington;

Now, Therefore, I, E. F. Benson, Commissioner of Agriculture of the State of Washington, under authority conferred by chapter 13, Laws of 1917, of the

State of Washington, do hereby quarantine the entire counties of Kittitas, Yakima and Benton, in said State of Washington, and establish the following

RULES AND REGULATIONS.

1. All dogs running at large within the boundaries of the counties herein specified shall be properly and securely muzzled so as to prevent their biting other dogs or animals.

2. No dogs shall be transported or moved from the territory hereinbefore quarantined to any point outside the quarantined area unless permission has first been secured from the Commissioner of Agriculture, or his authorized agent.

PENALTY.

Any owner, owners or agents who wilfully violate or negligently allow this quarantine or these rules and regulations to be violated shall be guilty of a misdemeanor and be punished by a fine of not more than two hundred fifty dollars ($250.00), or be imprisoned in the county jail for not more than ninety (90) days.

Peace officers, under the provisions of section 5, chapter 100, Laws of 1915, are requested to assist in the enforcement of said quarantine rules and regulations, and any person is authorized under the provisions of chapter 13, Laws of 1917, to destroy, without liability therefor, any dog not muzzled as herein provided and found running at large in the herein defined areas.

E. F. BENSON,
Commissioner of Agriculture.

Dated November 27, 1917.

Order No. 11.

STATE OF WASHINGTON.
DEPARTMENT OF AGRICULTURE.

NOTICE OF QUARANTINE.

The fact has been determined and notice is hereby given that a contagious, communicable disease, known as rabies or hydrophobia, exists in the County of Franklin, in the State of Washington;

Now, Therefore, I, E. F. Benson, Commissioner of Agriculture of the State of Washington, under authority conferred by chapter 13, Laws of 1917, of the State of Washington, do hereby quarantine the entire area of Franklin County, in said State of Washington, and establish the following

RULES AND REGULATIONS.

1. All dogs running at large within the boundaries of Franklin County, Washington, shall be properly and securely muzzled so as to prevent their biting other dogs or animals.

2. No dogs shall be transported or moved from the territory hereinbefore quarantined to any point outside the quarantined area unless permission has first been secured from the Commissioner of Agriculture, or his authorized agents.

PENALTY.

Any owner, owners or agents who wilfully violate or negligently allow this quarantine or these rules and regulations to be violated shall be guilty of a misdemeanor and be punished by a fine of not more than two hundred fifty dollars ($250.00), or be imprisoned in the county jail for not more than ninety (90) days.

Peace officers, under the provisions of section 5, chapter 100, Laws of 1915, are requested to assist in the enforcement of said quarantine rules and regulations, and any person is authorized under the provisions of chapter 13, Laws of 1917, to destroy, without liability therefor, any dog not muzzled as herein provided and found running at large in the herein defined areas, to-wit: Franklin County, Washington.

E. F. BENSON,
Commissioner of Agriculture.

Dated January 28, 1918.

FORAGE POISONING.

From time to time reports have been received that horses in the Walla Walla section had been dying from a strange malady. Dr. J. H. Martin of this department accordingly visited that district and, in company with Dr. J. W. Woods, made a field investigation of this disease. Following is his report:

Olympia, Washington, February 20, 1917.

Commissioner of Agriculture,
Olympia, Washington.

Dear Sir: Following instructions received from your office, I have made as full and complete an investigation of the outbreak of the peculiar disease in horses located in Walla Walla County as circumstances and apparatus would permit. This disease has been present in Walla Walla County several times during the past twelve or fifteen years, but perhaps did not appear on so many ranches as during the present outbreak; hence did not attract so much attention. This disease attacks both horses and mules, and may also prove fatal to cattle; however, but little evidence was secured indicating that fatalities had occurred among the cattle. I found this disease more or less prevalent on several of the ranches in the Dry Creek vicinity, and near Pleasant View, all in Walla Walla County. The fatalities numbered from two to fifteen head of horses on each ranch; but I did not think that all the fatalities were due to this particular disease—some having died from other causes.

The first cases of this disease have usually been observed during the late fall months, or early winter, and may be found throughout the winter season, or until the animals have been removed from the grain stubble, or from the straw stacks, upon which they have been subsisting. Occasionally cases of this disease may appear within a period of two or perhaps three weeks after the animals have been removed.

SYMPTOMS.

1. The symptoms are not uniform in the different cases, but the general appearance and line of symptoms follow in typical cases.

2. The first changed condition usually noticed is one of drowsiness, or dullness, when at rest; the head hanging and eyes almost or entirely closed.

3. The movement of the animal is unsteady, or irregular, showing wabbly gait.

4. This condition is often followed by restlessness, moving across the corral, or field, and then circling around, returning to same place—usually with a very unsteady gait, sometimes excited, not observing obstacles, as wire, or wire fences which may be in the path.

5. Usually among the first symptoms will be noticed a pinkish or reddish urine when voided changing in a few hours to a very deep red, then after one or two days becoming very dark or dark brown.

6. In more advanced stages the muscles of the face are drawn, with a jerking of the head and body muscles, and the lips are drawn apart.

7. Sometimes there is feed or straw in the mouth being partly chewed, or masticated, apparently forgetting to swallow.

8. The animal will stand with the legs bracing his body, and will lean against he fence, or against the stall if in the barn.

These are the most common symptoms; occasionally others are observed, and continued from one-half day to several days—sometimes a week or more before the animal dies. I am of the opinion that these animals show symptoms, probably of a nervous character, before any of these characteristic symptoms are shown, and it is only after considerable development of the disease process that anyone observes the condition signifying that there is something wrong with the animal.

POST-MORTEM FINDINGS.

The blood shows dark venous in appearance; there being no real red blood from the arteries, showing that the red corpuscles have been more or less destroyed—that is decomposed. The blood may have almost a tarry appearance, and is very slow to clot or coagulate; in some cases may not show any clot at all. The alimentary tract shows very little change that is noticeble to the unaided eye. The liver will show a bluish black color somewhat hardened and enlarged; the spleen is very dark, almost black, showing a hardened and leathery appearance; the kidneys show very dark red, the outer layer almost black.

CURE AND PREVENTION.

At the present time there is no known medicine or drug which may be administered giving any satisfactory results, after the animals have developed typical symptoms of the attack; hence the administration of drugs is not to be considered in connection with the disease.

The control of the disease lies in preventing the animals from consuming unwholesole forage. This unwholesome forage is found in the vicinity where this disease was present, consisting of straw, tar weed, and mustard, and some grain, which had been made wet or damp some weeks earlier. This forage contained quantities of mold and fungous growths found chiefly on the straw and chaff. The molds and fungi which causes this trouble are produced on the straw, weeds, grasses and grains only when the weather or climatic conditions are favorable for their growth. This growth will always occur during the continuance of a damp, sultry, atmosphere, and also if there have been rains, melting snows, followed by fairly warm days, during the autumn season. No serious trouble can arise in feeding this quality of forage, if it has not been exposed to this character of dampness, rains, or snows; hence it may be observed that an animal may subsist on this combination of feed when it does not contain these molds and fungous growths. It is evident that the best method of combating this disease lies in prevention. Moldy, improperly cured, fermented or damaged feed should not be given to horses, and a complete change of feed is of paramount importance if several of the symptoms are noticed as above enumerated.

Yours respectfully,
J. H. MARTIN,
State Veterinary Inspector.

CONTAGIOUS ABORTION.

(Bang's Bacilli Infection.)

Abortion disease is of first importance in this state. Large financial losses are suffered year after year. Although the disease has been the subject of much investigational work and the causative agent is known, we appear to be no nearer a solution of a rational method of effective treatment than before.

As the disease is of a chronic character and appears to be self-limiting, establishing an immunity, owners of cattle affected with this disease have been advised to retain the aborting animals in their herds, provided they are worthy of retention and otherwise appear to be healthy. Adding cattle from outside sources often adds fuel to the flames. The animals that have gone through the abortive period are much more liable to produce a strong living calf than susceptible cows which have not established an immunity.

In referring to immunity in this disease it should be kept in mind that the term is relative only. As far as present knowledge goes, it may be said that there is no absolute method of curing the disease or producing immunity. Carbolic acid, methyline blue, serums, bacterins and vaccines have been more or less popular at different times, but the department does not feel that the success attained by the use of any of these agents is sufficient to warrant its recommendation by us. The sequelae, or morbid condition left after abortion may, and most often does, deserve the attention of a trained veterinarian. The most common of these complications are retained afterbirth, metritis and sterility. Animals affected with these conditions are often sold to the unsuspecting buyer who thereby introduces the disease into his own herd. It is plain that some regulatory control measures should be instituted, but the disease is so widespread, so chronic and insidious in character, that it is doubtful if a method of sanitary control can be placed in operation at this time. In lieu of a proper supervision over sales of cattle, it is respectfully suggested that there is need for a law requiring the seller of cattle to provide the buyer with a health certificate. Such a law would restrict the trading and sale of diseased bovine animals.

HEMORRHAGIC SEPTICEMIA.

This disease has been recognized in the state for many years, but during the period covered by this biennium has not given us much concern except in a few instances. Practically all of the cases found can be traced to shipments from public stockyards. In each case reported to the department, immunization treatment by the use of biologicals has been recommended as medicinal treatment has been found to be of little value. Young stock (cattle) appear to be most susceptible, but in some instances sheep have also been affected.

ACTINOMYCOSIS OR LUMP JAW.

A number of these cases are reported from time to time. Owners are advised to treat the affected animals or have them slaughtered under proper inspection.

BLACKLEG.

Black leg remains endemic in this state, and outbreaks of the disease are often reported. The important treatment is of a prophylactic nature. Every owner of susceptible livestock should keep them vaccinated.

During this biennium 17,950 doses of black leg vaccine have been distributed to veterinarians and cattle owners.

ANTHRAX.

Anthrax has been suspected in Skagit and King counties. Reports from specimens submitted to laboratories in Seattle indicate that an organism resembling bacillus anthracis has been found, but the diagnosis has not been confirmed by animal inoculations. This is a disease that may at some future time cause much livestock losses in our cattle districts, especially in overflowed and swamp land.

SHEEP SCAB.

In handling this troublesome disease we have enjoyed the co-operation of the United States Bureau of Animal Industry. Scabies of sheep has been becoming more prevalent throughout the west during the past two years, until there is reason to look with suspicion on all shipments of sheep from districts outside of the state.

Scab first made its re-appearance in the feed yards of the Union Meat Company at Lyle, Klickitat County. Since that time there have been sporadic outbreaks, as will be seen by a reference to the appended table.

The laws relating to the interstate movement of sheep provide that they shall be inspected by the state veterinarian after coming into the state. It is to be hoped that the force of veterinarians may be increased to the end that our present sheep laws may be enforced. It is doubtful if entire dependence can be placed on the inspection of lay county inspectors, and for that reason alone there is need for trained veterinary sanitarians of this department, who will supervise this class of work in their districts.

Sheep scab is one of the oldest known animal diseases. It is caused by the mite psoroptes ovis, which measures about 1-50 of an inch in length. These mites borrow into the skin, producing an irritation which causes the sheep to become restless. To relieve this irritation they rub, scratch and bite themselves. As the disease progresses scabs form and the wool falls out; finally the general condition of the sheep becomes affected; they become unthrifty and, if the disease is allowed to progress unhampered, death follows. These scab mites readily become transferred from one sheep to another. They work so insidiously that many more sheep are affected before the infestation is suspected.

Treatment is directed toward the destruction of the scab mite. When this is accomplished the disease is cured. This department recognizes certain proprietary dips used in the treatment of scab, which have the approval of the Bureau of Animal Industry. All "exposed" sheep are dipped once and "diseased" sheep are dipped twice, under the supervision of veterinarians of this department, or the bureau, or both. During the biennium 81,391 sheep were dipped for this disease, 48,000 being dipped twice.

Sheep scab is the greatest disease menace to the wool-growing industry, and at all times deserves our close attention. The sheep interests of the state, valued at about $10,000,000.00, are entitled to protection. We are doing our utmost with the means at our command, but should we be visited by an epidemic of sheep scab, which would necessitate a general dipping and quarantine order for all sheep within the state, it would be wise to have an emergency fund on hand.

When sheep scab was discovered in Okanogan County in October, 1918, the following order was issued:

Order No. 12.

STATE OF WASHINGTON.
DEPARTMENT OF AGRICULTURE.
DIVISION OF DAIRY AND LIVESTOCK.

The fact has been determined, and notice is hereby given, that the contagious disease known as sheep scabies is now known to exist in Okanogan County.

Now, Therefore, I, E. F. Benson, Commissioner of Agriculture, under authority conferred on me by law, do hereby issue the following order, to-wit:

1. All sheep which are, or have been, exposed to the disease of sheep scabies shall be dipped once under the supervision of a veterinary inspector of the Department of Agriculture, or a veterinary inspector of the United States Bureau of Animal Industry, in a dip approved by the said Bureau of Animal Industry.

2. All sheep which are now affected with, or have originated from a flock in which scabies is known to exist, shall be dipped twice in a dip approved by the United States Bureau of Animal Industry, and such dipping shall be supervised by veterinary inspectors of this department or of the Bureau of Animal Industry.

3. All stockyards and stock cars in which sheep known to be affected with scabies have been quartered shall be cleaned and disinfected in a manner approved by the veterinary inspector in charge of this work, before again being used for the quartering or transportation of livestock.

4. For the purpose of this order all sheep which have been trailed, herded, driven or otherwise moved over the designated driveways of the Okanogan National Forest shall be considered exposed to the disease known as sheep scabies.

Done at Olympia, Washington, this 7th day of October, 1918..

E. F. BENSON,
Commissioner of Agriculture.
By R. J. DONOHUE,
Assistant Commissioner of Agriculture.

SCABIES IN SHEEP, SHOWING NUMBER AND LOCATION OF OUTBREAKS OF THIS DISEASE.

Date	Location	Owner Diseased Flocks	Reported by	Number Infected and Exposed	Origin of Infection
2-14-17	Lyle...............	Union Meat Co........	E. C. Joss........	11,250	Portland, Ore.
4-18-17	Vancouver........	W. W. McBride........	A. C. Brown......	411	Oregon
5- 2-17	Seattle............	Stacy St. Stock Yards. Barton & Co...........	J. Madsen........	3,000	Unknown
9-22-17	Woodland........	W. W. McBride........	E. C. Joss........	281	Unknown
2-22-18	Lyle...............	Union Meat Co........	E. C. Joss........	9,982	Unknown
7-27-18	Okanogan Forest	E. S. Hubbard.........	P. T. Harris......	30,000	Oregon (?)
6-27-18	Richland..........	E. S. Hubbard.........	L. C. Pelton......	150	Oregon
10- 5-18	Okanogan Forest	W. W. Hopkins........ Yakima Sheep Co...... Dipper Sheep Co....... Albert Treiber.......... Archie Prior............ Robert Prior........... Thomas Drumheller.... Allan Drumheller.......	L. C. Pelton......	58,000	Hubbard Sheep on Forest Driveway
9-15-18	Pateros...........	Peter K. Jess...........	W. C. Dye........	19	Hubbard Sheep at Pateros
9-15-18	Pateros...........	Oscar Miller............		52	
9-16-18	Carlton...........	M. Chapman...........		5	
9- 3-18	Twisp.............	S. T. Miller.............		10	
10-15-18	Colville Indian Reservation.....	W. T. Albritton........ R. R. Glasco........... C. F. Flower...........	J. H. Martin.....	1,648	Hubbard Sheep

OTHER DISEASES.

In addition to the diseases of livestock hereinbefore noted, there are many diseases reported to the department which, upon investigation, prove to be due to some cause other than infection or contagion.

While we do not care to handle work which should be done by the private veterinary practitioners of the state, we find it is often advisable that we investigate such conditions wherever practicable, although we have not thought it to be our duty to treat such cases. If such treatment were carried out by us the department would be placed in the position of handling general veterinary practice—something we do not feel it our duty to do—and although there may be complaints made in cases where we refuse assistance, we feel that such complaints are unwarranted. This department should not render service for the individual, unless by so doing the public welfare is protected.

ACKNOWLEDGMENT.

It is felt that much credit for the general health of the livestock of the state is due to the veterinarians who are in private practice. These men have shown at all times a willingness to co-operate with and aid the department in the control and eradication of livestock diseases. We acknowledge our appreciation.

Respectfully submitted,
R. J. DONOHUE,
Chief, Division of Dairy and Livestock.

WASHINGTON STATE BOARD OF VETERINARY MEDICAL EXAMINERS.

E. F. Benson, Olympia, Commissioner of Agriculture, Ex Officio President of the board.

Dr. J. T. Seely, 1101 Westlake Avenue, North, Seattle.

Dr. W. D. Garratt, prior to November, 1918, Puyallup.

Dr. Robert Prior, subsequent to November, 1918, Yakima, Wash.

Under the veterinary practice act passed by the legislature of 1907 a provision was made for a board of veterinary medical examiners, consisting of a president, secretary, and treasurer.

The function of the board is to examine applicants who desire to practice their profession in the State of Washington. The examination embraces the following subjects: Anatomy, Physiology, Histology, Bacteriology, Surgery, Hygiene, Sanitation, Practice of Medicine, Contagious Diseases, Obstetrics and Parisitology.

The object is to increase the efficiency of the veterinary profession within the state by licensing practitioners who have the necessary learning and who are capable of administering to the wants of the livestock industry in an intelligent and conscientious manner; to obstruct the working of empirics and imposters who prey upon the uninformed, rendering a service, in many instances based upon fallacy and really harmful, for it imbues the unsuspecting stockman with a sense of security when in reality he is in danger of serious financial loss.

The appropriation for the maintenance of this board is $1,000.00 for the biennium, but due to the fact that the expenditures are limited to the income, it is in reality self-sustaining.

The following is a complete list of all graduate veterinarians licensed to practice in the State of Washington:

Name—	Last Known Address.
Ackley, C.	Kelso
Badeley, J. C.	Walla Walla
Bailey, J. Hess	Palouse
Baker, E. T.	Moscow, Idaho
Baker, R. E.	Wenatchee
Baynes, C.	Tacoma
Beletski, T.	Wasco, Ore.
Bigerell, G. W.	Fairfield
Bestul, R. J.	Grants Pass, Ore.
Booton, L. R.	Tekoa
Bogart, E. A.	Centralia
Boyles, R.	Colton
Brown, D. W.	Battleground

Name—	Last Known Address.
Brown, S. L.	Newburg, Ore.
Brown, L. A.	Oregon
Brown, O. S.	Edwall
Brown, A. C.	Vancouver
Bullivant, J.	Spokane
Button, R. A.	Tacoma
Button, A. I.	Kent
Button, O. G.	Tacoma
Buzard, A. E.	California
Calkins, F. P.	Michigan
Carstensen, C.	Davenport
Cassels, F. H.	British Columbia
Close, F. W.	Lewiston, Idaho
Clark, G. W.	Yakima
Clark, A. E.	Oakesdale
Clark, R. D.	Deceased
Cornwall, O. L.	Almira
Cozier, Carl	Bellingham
Coppess, S. A.	Deceased
Coults, R.	Alaska
Cramer, E. J.	Kent
Crouse, A. E.	Rosalia
Cummings, B.	British Columbia
Craft, A. E.	Sunnyside
Damman, A. J.	Vancouver, B. C.
Dinse, A. J.	U. S. B. A. I., Texas
Dirstine, P. H.	Pullman
Donaghue, J. A.	Ritzville
Donohue, R. J.	Olympia
Doty, R. B.	Seattle
Drake, E. J.	South Dakota
Dunkan, G.	Deceased
Edmonds, E.	Mount Vernon
Ehner, E. H.	Sunnyside
Ells, F. C.	Spokane
Elliott, T.	Uniontown
Evans, E. I.	Hartline
Fast, G. B.	Ritzville
Ferguson, W.	Goldendale
Fehr, G.	Deceased
Fisher, A.	Georgetown
Fleming, R. J.	Palouse
Ford, J. A.	Sumas
Foster, S. B.	Portland, Ore.
Fullington, H. C.	Seattle
Fetridge, R.	Kent
Garratt, W. D.	Puyallup
Galbraith, A. R.	Garfield
Gibson, J. D.	British Columbia
Gilcrist, A. W.	Deceased
Gilliam, R. L.	Fairfield
Glaiser, W. V.	Tacoma
Glaiser, E. L.	Tillamook, Ore.
Glenn, V. D.	Montesano
Goin, J. W.	Goldendale
Graves, H. T.	Puyallup
Griesinger, Edwin	Wilson Creek
Haggard, Finch	Seattle
Hammond, W. L.	B. A. I.
Harrington, D.	Sunnyside
Hayes, W. J.	Creston
Habecker, I. N.	Oregon
Hadley, F. B.	Madison, Wis.
Hart, W. G.	Tulare, Cal.
Hartnagel, O.	Seattle
Hauschild, T. B.	Kennewick
Heldring, J. L.	Deceased
Hess, O. B.	Washington, D. C.
Hickingbottom, R.	Seattle
Hickingbottom, R. J.	Seattle
Hilton, J.	Seattle
Hjort, Carl	Stanwood
Howard, J.	Stanwood
Howard, G. P.	St. Johns
Huff, L. B.	B. A. I., Iowa
Husband, A. F.	British Columbia
Hutchinson, E. N.	Lynden,
Ickes, G. Z.	Palouse
Jackson, J. W.	Wenatchee
Jarvis, D. H.	Sandpoint, Idaho
Johnson, B.	Texas
Johnson, J. P.	Seattle

Name—	**Last Known Address.**
Johnson, Mark	Clarkston
Johnson, P. H.	Colville
Johnson, W. J.	Ethel
Jones, C.	Yakima
Jones, G. A.	Sedro Woolley
Kalkus, J. W.	Pullman
Kellum, V. S.	Seattle
Kennedy, E. D.	Moscow, Idaho
Kennedy, H. F.	Newport
Keown, H.	Victoria
Knapp, H. S.	Seattle
Kydd, W. H.	Oregon
Knox, J. H.	
Langdon, W. C.	Waterville
LeMay, D.	Fort Russell, Wyo.
Lloyd, T. J.	Port Angeles
Lull, F. C.	Ellensburg
MacIntosh, A. W.	British Columbia
Mackintosh, P.	Yakima
Martin, J. H.	Spokane
Mason, F. H.	Spokane
Mason, W. D.	Utah
Mast, R. P.	Pomeroy
Mawhinney, H.	Harrington
Menig, O.	Spokane
Miller, S. T.	Twisp
Miller, W. N.	Portland, Ore.
Mitten, James	Puyallup
Murray, J.	McMinnville, Ore.
McAllister, R. C.	Corvallis, Ore.
McBride, R.	Everett
McCoy, E. E.	
McCoy, J. H.	Colfax
McCoy, M. M.	B. A. I., Portland
McKibbin, J. A.	Colfax
Nelson, R. S.	Espanola
Nelson, S. B.	Pullman
Nevel, B. E.	Oregon
Nief, F. A.	Deceased
Norman, C. T.	Goldendale
Nye, E. W.	Colfax
O'Donnel, M. J.	Mansfield
Oderkirk, C. C.	Wilbur
Oliver, K. M.	Seattle
Osado, T.	Seattle
Overhulse, G. F.	B. A. I., Texas
Patric, L. A.	Snohomish
Pauhlman, V. C.	Prosser
Pelton, L. C.	Seattle
Pfenning, H. E.	Thorp
Phillips, C. S.	Mount Vernon
Phinney, J. A.	Deceased
Pickering, C. E.	California
Picking, C. F.	Vancouver, Wash.
Pike, F.	Spokane
Powell, E. T.	Idaho
Prior, Robt.	Yakima
Ralston, W. E.	Deceased
Reeve, R. A.	Everson
Richards, W. R.	
Richmond, H. A.	Toppenish
Roberts, E. S.	Blaine
Robillard, A. J.	Seattle
Rogers, E. K.	Spokane
Root, G. F.	O'Brien
Ross, W. J.	Mansfield
Rothlisberger, L. H.	Colville
Rude, A. E.	Davenport
Sandwith, C. J.	Friday Harbor
Saperstein, A.	Ferndale
Schader, C. H.	Sunnyside
Schultz, C. H.	Seattle
Seely, J. T.	Seattle
Shaw, R. L.	Deceased
Sheppard, G. F.	Wapato
Sheppard, J. N.	Wapato
Smith, F. E.	Seattle
Stewart, W. W.	Chehalis
Stickney, L. G.	Toppenish
Stouder, R. W.	Manhattan, Kan.
Strandberg, C. A.	Monroe
Stratton, J. J.	Spokane

Name—	**Last Known Address.**
Stuart, G. E.	Spokane
Swingley, G. A.	Seattle
Thompson, J. C.	Pomeroy
Trippler, H. A.	Walla Walla
Trotter, J. C.	Rockford
Unbewust, G. A.	Harrington
Unrau, G.	Arlington
Weeks, H. S.	Elma
Wegner, E. E.	Pullman
Whitlow, E. T.	
Wilson, W.	Dayton
Woods, J. W.	Walla Walla
Woodside, J. H.	Redmond
Wright, C. C.	Independence, Ore.
Yates, G.	Seattle

DIVISION OF HORTICULTURE.

Honorable E. F. Benson,
    Commissioner of Agriculture,
        Olympia, Washington.

Dear Sir: In pursuance of the requirements of the horticultural code enacted by the 1915 session of the Washington state legislature, I herein submit to you a summary of the administration of the division by my predecessor and a report of the activities since my incumbency of the office as chief of the division, May 26, 1917.

The very efficient administration of the affairs of the division by Mr. T. O. Morrison was terminated by his resignation May 19, 1917, to accept a position with the Federal Land Bank at Spokane, Washington. No specific changes were made in the system of the work as carried on by Mr. Morrison.

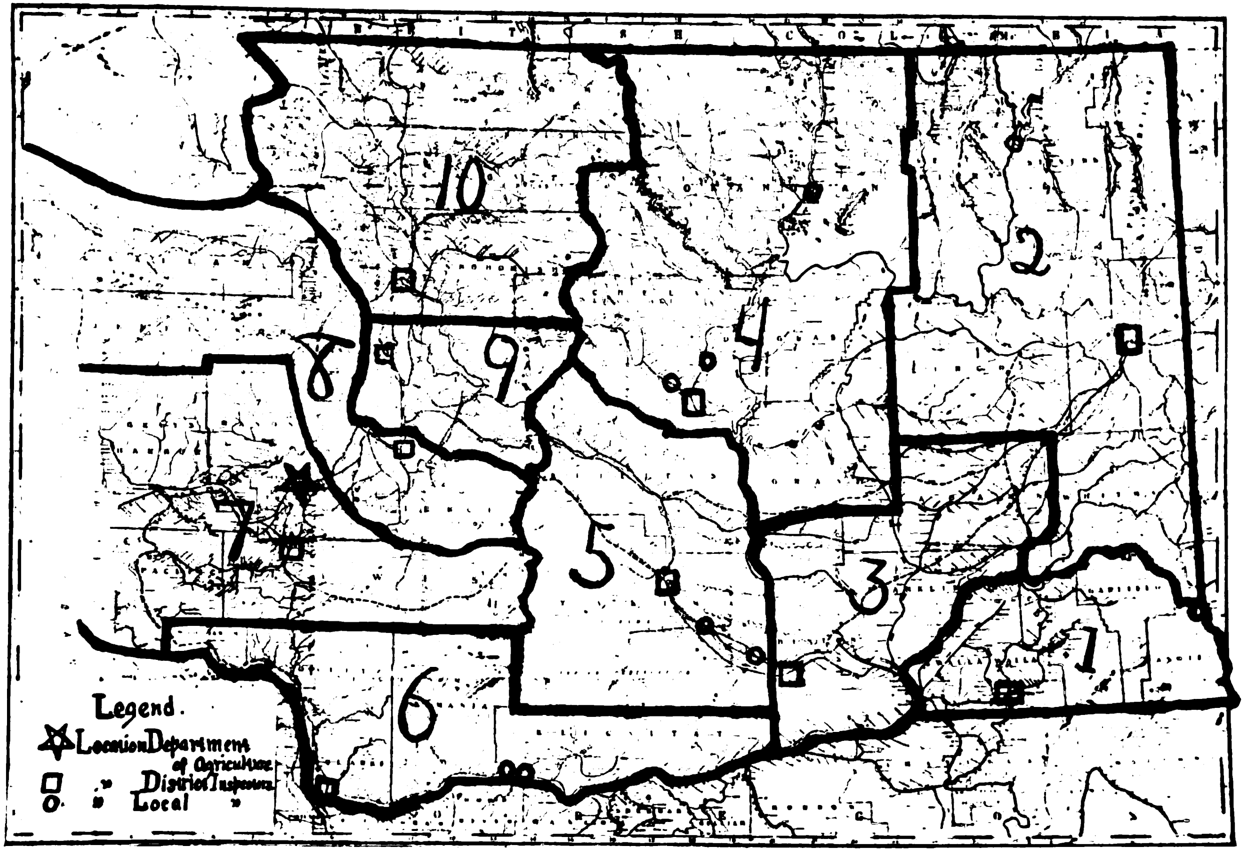
The work of the division is divided into several classes:

1. Orchard work.
   Demonstrative and educational work for the best insect and disease control.
   Crop estimates.
   State census of orchards.
   Police work.
   Disinfection and cleanup work.
2. Inspection.
   Inspection of nurseries, nusery stock and the issuing of licenses.
   Inspection of imported nursery stock and disinfection, or condemnation if necesary.
   Inspection of apples for grade and pack.
3. Inspection of fruit and vegetables.
4. Inspection of incoming potato shipments.
5. Co-operative work with the Federal Bureau of Markets, the State College of Agriculture, and the State Marketing Division recommending federal grades of potatoes, and the inspection of same.
6. Adoption of state standard grade and pack rules.
7. Enforcement of the state insecticide and fungicide law.

HORTICULTURAL DISTRICTS.

The state is divided into ten horticultural districts, each district having one "inspector-at-large" who is the district inspector.

District No. 1 comprises the counties of Asotin, Columbia, Garfield, and Walla Walla. Harry L. Miller is the district inspector, located at Walla Walla. The fruit interests are varied in this district. At Clarkston and some other points on the Snake River are to be found some of the most desirable conditions for the growing of sweet cherries of any place in the state. Bing, Lambert, and Royal Ann are the leading varieties. Peaches and prunes are also quite successfully grown in this territory. The growing of small fruit could be greatly increased in this district if market and transportation facilities were improved. The leading apples grown in this section are the Rome Beauty,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Location Department of Agriculture
" District Inspectors
" Local "

Delicious, and Jonathan. In the vicinity of Walla Walla is to be found the most extensive truck gardening interests of any section in the state, about 1,400 acres being devoted to the industry, onions ranking first in importance. Strawberries and other small fruits are grown in limited quantities in this territory. This section ranks second in the state from the standpoint of prune production. The Italian prune is second to apples in commercial importance. The leading varieties of apples grown in this section in the order of their prominence are Rome Beauty, Jonathan, Winesap, and Delicious. There are 532 acres of nuts in this district, more than half of which are in the Snake River territory.

District No. 2 comprises the counties of Ferry, Lincoln, Pend Oreille, Spokane, Stevens, and Whitman. The district inspector is E. B. Kelley, located at 503 Columbia Building, Spokane. District No. 2 is primarily an apple district, although some other of the tree fruits are grown with varied degrees of success. The one principal variety which predominates in this district is the Wagner; the largest planting being in the vicinity of Spokane. Rome Beauty is probably the next most popular variety. Strawberries are commercially grown in the vicinity of Spokane, but not in sufficient quantity to supply local demands. At Kettle Falls and some other points on the Columiba River in Stevens and Lincoln counties the orchard interests are of some commercial importance. Climate and soil conditions are good, but lack of transportation facilities handicaps these sections.

District No. 3 comprises Adams, Benton, and Franklin counties. Luke Powell is district inspector, located at Prosser. In this district is to be found the most extensive strawberry growing interests of any section in the state. Kennewick is the principal shipping point. Many of the European grapes are successfully grown in Franklin and Benton counties. This district is also one of the important peach sections in the state. With apples the Winesap takes the lead, Jonathan, Delicious, and Rome Beauty following in the order enumerated. There are, of course, many other varieties grown. Pears, prunes, plums, and cherries are very successfully grown in some parts of the district.

District No. 4 includes Chelan, Douglas, Grant, and Okanogan counties. P. S. Darlington is district inspector, located at Wenatchee. This district is the one district in the state which stands out as a strictly specialized, commercial fruit section, the principal territory being tributary to the Wenatchee, Okanogan, and Columbia rivers. Apples predominate, the leading varieties being Winesap, Jonathan, Delicious, Spitz (Esopus), Stayman, and Rome Beauty, ranking in the order enumerated. There are, of course, many other varieties grown, but the enumerated ones are the principal commercial sorts. This district is a leader in the production of apricots and produces many sweet cherries, peaches, and pears, but does not produce enough small fruit to supply local markets.

District No. 5 comprises Yakima and Kittitas counties. C. B. Wood is district inspector, located at Yakima. The Yakima Valley has the largest general production of fruit of any district in the state, and probably the fruit interests are more diversified than in any other section, due to the range of elevation from the bench lands of the Cascade Mountains in Kittitas County to the level of the Columbia River. Approximately 45,000 acres of land in Yakima County alone is planted to orchard. There are about 3,200 orchards which show an average of about 15 acres per orchard. The recent orchard census taken by the department shows that there are more than 750,000 Winesap trees in the county, and 500,000 Jonathan, Rome Beauty, Newtown, and Delicious, ranking in the order named. The largest tonnage of pears in the state is grown in Yakima County. There are more than 400,000 pear trees in the county. There are also more than 300,000 peach trees in this district, making it the largest peach producing section in the state. Sweet cherries and prunes are also grown in commercial quantities.

District No. 6 includes Clarke, Cowlitz, Klickitat, Skamania, and Wahkiakum counties. I. R. Fletcher is the district inspector located at Vancouver. In this district is to be found the principal prune producing sections in the state. Clarke and Skamania counties probably produce more prunes than are grown in the balance of the state. There are 258 driers in the district, having a daily capacity of 1,151 tons. In Klickitat County, in the vicinity of White Salmon and Underwood in Skamania County is to be found some very desirable apple sections. The Newtowns, Spitz (Esopus), and Delicious are the leading varieties. In this district almonds, filberts, English and American walnuts, and chestnuts are successfully grown in commercial quantities. In Clarke County figs are grown near Vancouver.

District No. 7 includes Grays Harbor, Lewis, Mason, Pacific, and Thurston counties. E. F. Perry is the district inspector, located at Chehalis. In this district is located Pacific and Grays Harbor counties, in which is to be found the principal cranberry interests of the state. The cranberry is indigenous in many places in Western Washington, but the leading commercial development of cranberry growing has been in Pacific and Grays Harbor counties. Cranberries grow wild in Massachusetts, New Jersey, Maine, New York, Michigan, Minnesota, Wisconsin, Washington, and a few other states.

In 1830 the cranberry became a cultivated commercial product in Lincoln, Mass. In 1845 it became a commercial enterprise in New Jersey. New York, Michigan, and Wisconsin supplied the markets with the berries from the wild bogs for many years, but today there are many acres of cultivated bogs to be found in these states.

In Western Washington the development of cultivated cranberry bogs started about 1880 and today in Pacific and Grays Harbor counties are to be found about 1,000 acres of bogs, 600 of which are in a good state of productiveness. In Pacific County the 1918 crop from about 400 acres is 40,000 boxes, about 40 pounds each, the capacity of the box being one-third of a commercial cranberry barrel. Present market prices range from $4.00 to $5.00 per box, which makes it a promising industry where conditions are favorable.

In the other counties of the district pears and small fruits are successfully grown when given good attention. In this district the wild blackberry grows profusely in the cut-over timber lands and is gathered in large quantities for canning factories. The local demand and canning factories consume the output from this territory.

District No. 8 includes Clallam, Jefferson, Kitsap, Pierce, and San Juan counties. Henry Huff is the district inspector, located at Sumner. In Pierce County is to be found the most important bush fruit growing section in the state, while the other counties produce limited quantities of the tree fruits, the surplus of which is consumed by the extensive canning plants located at Puyallup and Sumner. Grapes are grown very successfully in this district on some of the islands located in the Sound. Probably more different varieties of apples and pears are grown in this district than any other part of the state.

District No. 9 is King County. F. N. Rhodes is the district inspector. He is located at 420 City-County Building, Seattle. Pears do especially well in many places in this district. Apples adapted to the coast conditions are grown successfully in many parts of the district. The Yellow Transparent, Duchess, Wealthy, Gravenstein, King, and Northern Spy are the most popular. Some of the islands in this district have been noted for the production of high grade fruit since the inception of fruit growing in the Northwest.

District No. 10 includes Skagit, Snohomish, and Whatcom counties. J. C. Eakle is district inspector. He is located at Seattle with Mr. Rhodes because the counties of that district have failed to make provision for an office in the district; hence he spends a part of the time assisting Mr. Rrodes and the balance in his district with headquarters at Bellingham. The commissioners of Snohomish County have recently made an appropriation for horticultural work and headquarters for this district will probably be transferred to Everett.

COUNTY INSPECTORS.

The provisions of the horticultural law are such that it is the duty of the commissioners of each county to levy an assessment upon the taxable property of their county to defray all expenses incurred for orchard inspection and other horticultural activities within the county. The appropriations in the different counties range from $500.00 to nearly $15,000.00. In the principal fruit valleys the number of local county inspectors is controlled by the size of the county appropriation, varying in number according to the horticultural activities in the different seasons of the year. The list of counties making appropriations for horticultural work is as follows:

Asotin
Chelan
Clallam
Clark
Columbia
Douglas
Garfield
Grays Harbor
King
Klickitat
Lewis
Mason
Okanogan
Pierce
Skamania
Snohomish
Spokane
Stevens
Walla Walla
Yakima

ORCHARD WORK.

The work in connection with the orchards is mainly in the nature of general inspection, watching for any outbreak of new diseases or insects or evidence of increased activity of the already present pests. This work naturally divides itself into educational work and police duties. The orchards of the state constitute, in the aggregate, such an immense area it becomes impossible for the district inspectors to give as close attention to each orchard as is necessary to secure the best results. Upon the discovery of any new pests or an increased activity of any of the old ones the owner is at once given information and demonstrations, if necessary, as to the best methods of treatment.

In the extensive commercial centers there is an increased demand for instruction of this kind, and the best trained horticulturists are needed for the work. Where the county appropriations are sufficient the inspection force is increased so that the orchards are given more attention by the local inspectors.

In the orchard work many meetings are held where problems pertaining to pruning, orchard care, and pest control are freely discussed. It has been the policy of the divison for several years to each year test new spray materials and work out methods of their application, strength of mixtures, and the proper time to apply them to get the best results. Spraying charts have been issued and generally distributed among fruit and vegetable growers, giving instructions as to when spraying for the different insects and diseases should be done, and what solutions should be used. Vegetable gardening is becoming a prominent enterprise in some parts of the state and much information on the control of the garden pests is given out.

EXPERIMENTAL WORK.

Through the courtesy of Mr. F. A. Frazier of the Niagara Spray Company, Niagara, N. Y., a dusting machine, together with a quantity of dusting material, was furnished to H. L. Miller of Walla Walla to be used for the control of aphis on the vegetable garden crops in that section. Where the dust was applied soon enough after infestation the results were very satisfactory.

The greater amount of the systematic experimental work done by the division was carried on by H. E. Waterbury of Yakima in the fifth district. The county commissioners of this county make such appropriations for horticultural work in the county that it enables the work to be done. Mr. Waterbury succeeded Mr. F. E. De Sellem, who resigned in May to accept a position with the Federal Bureau of Markets.

We quote from his anunal report for Yakima County as follows:

Although experimental work is not mentioned in the horticultural laws of the State of Washington as a definite function of the horticultural inspectors, there are so many problems to be solved in the handling of which the State College has been unable to give assistance that, for the past three years, the inspector located at Yakima has done some work along this line with favorable and encouraging results. The work was begun in a small way, but has developed until it has become a considerable part of the local department program. Aside from the unquestioned need for such work there has been a real demand for it. If an experiment station should be located in the Yakima Valley in the near future, and there is little doubt that it will be, much of the work which we have taken upon ourselves will be taken over by it. Until that time, however, it seems advisable and even necessary to devote some time toward deciding the more important and perplexing problems to the best of our ability.

Heretofore the most comprehensive experiments have been those relating to codlin moth control. As a universal trouble maker, the codlin moth is without a peer, and it was felt that if even a slight advance could be made in control measures it would be of sufficient value to the fruit industry to compensate for the expense of any investigations which we would be able to make.

In 1916 the entire experimental tract in the Congdon orchards was devoted to codlin moth work exclusively, and in 1917 the greater part of the work was also along the lines of codlin moth control. In 1916, although no criticism could be made of the facilities placed at our disposal, nor with the splendid co-operation extended by the management of the Congdon orchards, there was, strange to say, one serious difficulty. The orchard surrounding the experimental plot was too clean, that is, the infection in that locality was not severe enough to make the test of the various materials a difficult one. This statement is supported by the counts made on the check plot which produced 80 per cent clean fruit with no spraying at all. To make the results more conclusive it was felt that plots should be selected in the lower valley where, on account of climatic conditions and the age of the orchards, the infestation is more severe. In addition it was decided that inasmuch as the codlin moth is not our only pest, part of the expenditure should be made in experimenting with control measures for some of the other pests and diseases. For this reason plans were made for experimenting with sprays for the powdery mildew and woolly aphis as well.

The codlin moth work was a continuation of the work done in 1916, and the points on which information was desired were as follows:

1. The relative efficiency of various strengths of arsenate of lead.
2. The relative efficiency of arsenate of lead paste, powdered lead arsenate, calcium arsenate, and nicotine sulphate.
3. The relative importance of spraying at different times during the season.
4. The relative efficiency of varying strengths of nicotine sulphate.
5. A comparison of arsenate of lead and distillate oil emulsion vs. nicotine sulphate with reference to the effect on both codlin moth and aphis.

Three experimental tracts were selected in the lower valley, the first containing approximately nine acres in the E. W. Ross orchard at Buena, the second containing approximately four acres in the orchard of R. B. McLeod in the Orchardvale district, three miles below Zillah, and the third, containing about one and one-half acres in H. C. Gest's orchard between Sunnyside and Emerald. The first tract consisted of trees ten years old of four varieties—Jonathan, Spitzenberg, Newtown and Winesap; in the second the trees are fifteen years old and of six varieties—Jonathan, Winesap, Newtown, Rome Beauty, Arkansas Black, and Stayman; in the third the trees are about twenty-five years old, and in the tract selected for the work all are Spitzenbergs. All these orchards have had a great deal of trouble with codlin moth. In the Gest orchard the writer has taken from a single band over 200 larvae at one time. While the other two orchards are not so badly infested, there is no doubt that codlin moth are present in sufficient quantities to make thorough and continuous spraying a necessity.

While all the codlin moth work was carried on below Union Gap because of the reasons given above, it was decided to locate the woolly aphis control work in the upper valley, not because the infestation there was any greater than in the lower valley, but because it is a more important economic problem in the upper valley than the codlin moth and the growers were more interested in it. For experimental purposes a plot containing 96 apple trees was selected in the orchard of S. B. Shiley in the Lower Naches. The varieties were Winesap, Jonathan, Winter Banana, and Delicious. The treatments planned were for the control of the root form of the woolly aphis as well as the aerial form.

It seems, however, that it was a mistaken enthusiasm which prompted us to locate our experimental tracts so far apart. The chief interest centered in the codlin moth experimental work, both on account of the larger and more elaborate schedule of experiments mapped out, and also because it was a continuation of previous work. Therefore, the woolly aphis experiments were neglected from time to time and much data which, without doubt, would be of value was lost. The changes in personnel of the experimental force, already referred to, which took the writer temporarily into private work and his successor into the army, left no one who was acquainted with the work, from its inception, and no one has had the opportunity to make continuous observations throughout the season. The result is that our conclusions are a patchwork of the observations of several different men, and any information published is necessarily a generalization.

For the experiments on powdery mildew we were fortunate in securing a plot containing 240 trees located in a Black Ben Davis orchard, belonging to S. M. McKee of Selah. This orchard had been very badly infected with mildew in 1916, many hundred boxes of apples being degraded or lost altogether. The effect on the fruit had been more marked than any heretofore observed in the Yakima Valley, as frequently from 25 to 75 per cent of the skin of the apple was roughened and russeted, giving it an appearance similar to frost injury. Unfortunately, what has been said of the woolly aphis experiments is also true to a less extent of powdery mildew experiments. Certain information was obtained which, we feel is of great value, and a start has been made which may lead to more important results another season.

In the spring of 1917, at the request of Mr. F. A. Frazier of the Niagara Sprayer Company, plans were made to try out the dust sprays which have been attracting so much attention in the East and some parts of the West. The request came so late that it was impossible to incorporate this experiment with others in the lower valley, so the work was carried on in a small orchard inside the city limits of Yakima.

Codlin Moth Experimental Work in Ross Orchard.

Early in the season this tract was selected and divided into twenty-two plots, the varieties being divided as evenly as possible so that each plot had at least two varieties and most of them three. Each tree was tagged with a linen tag showing number of the tree and plot letter, and blue prints were made of the entire tract to avoid confusion among the men employed on the work. To avoid prejudice count trees were selected early in the season before any spraying was done, and during the season a record was kept of all thinnings and windfalls as well as of the harvested fruit. Out of a total of 530 trees on the entire tract, 114, or 21½ per cent, were selected as count trees, a larger percentage than is usually selected, and every apple from these count trees was picked, sorted, and counted under the direct supervision of the horticultural office. In sixteen of the twenty-two plots count trees were selected in such a way as to locate them at least fifty feet from any other plot with another row of trees intervening, making it almost impossible for spray which might be blown from another plot to affect them.

In the check plots which remainded unsprayed throughout the season there was considerable variation. In the one adjoining the county road, where the dust was deep, the fruit was thickly coated with dust throughout the season and 40.96 per cent clean fruit was produced. The varieties on this plot were Winesap, Jonathan, and Yellow Newtown. In the other check plot which was composed entirely of Spitzenbergs, there was only 6.4 per cent clean fruit. This plot, however, was not exposed to the dust like the other check plot and so did not receive that protection.

The results of the spraying on the other plots was not at all satisfactory from the standpoint of clean fruit. Without doubt the greatest mistake was made when all of the plots were allowed to go unsprayed from the 23d of July to the 21st of August. At this time tens of thousands of worms were hatching and from the results of observations made, we are convinced that the greatest damage occurred between the 8th and the 21st of August. This is a lesson in itself, as it proves what should have been realized before, namely, that in the lower valley, where infestation is severe, the fruit cannot be kept clean if allowed to go unsprayed for nearly a month at that time of year. The lesson is even plainer to this particular case, for all the spraying done by the department was done by experienced men and was as thorough and painstaking as it could possibly be.

So far as these results have bearing on the experimental tests, the heavy infestation was a benefit rather than a detriment, for a clean orchard, as we have pointed out before, does not afford a satisfactory test of the efficiency of any spray. Whereas a serious infestation, like that encountered in this experiment, does give the experimenter a right to draw conclusions.

It will be noted that in our summary we have made a distinction between worms and stings. While we have taken into consideration the fact that any apple in any way damaged by codlin moth larvae has not received adequate protection, at the same time it must be admitted that the apple has received some protection and retains a commercial value, although it may be a diminished value. It is also of interest to note whether the proportion of stings will decrease as the proportion of worms decreases. In 1916, where the proportion of wormy apples ranged from 6 to 8 per cent, the proportion of stings was less than 1 per cent. In 1917, where the proportion of worms was 8 per cent, the proportion of stings was from 17 to 19 per cent.

Paste Arsenate of Lead—One Pound to Fifty Gallons of Water vs. Two Pounds to Fifty Gallons vs. Four Pounds to Fifty Gallons.

The results here appear to confirm the results obtained a year ago. In Plots A, B, C, and E we have basis for an excellent comparison. From the tabulated results it is clear that one pound of paste lead to fifty gallons of water is not sufficient to control codlin moth. Two pounds to fifty gallons shows about 20 per cent more clean fruit and, in turn four pounds to fifty gallons shows about 10 per cent more clean fruit than two pounds to fifty gallons, and 30 per cent more clean fruit than one pound to fifty gallons. However, the results on Plot E indicate that four pounds to fifty gallons is not necessary throughout the season, but that the beneficial results of the stronger solution are gained in the later applications. On Plot E, where two pounds to fifty gallons was used for the first three sprays and four pounds to fifty gallons for the last two, the results are very slightly inferior to those on Plot C where four pounds to fifty gallons was used throughout. For several years complaints have been made by growers in the Yakima Valley, particularly in the lower valley, that the codlin moth did most of its damage in the latter part of the summer. They also complained that at that season the lead seemed to have little effect on the young worms, even when the apples appeared to be coated. Their complaints were supported by the evidence, as many orchards which have had less than 1 per cent infection on August 1st have developed from 10 per cent to 50 per cent infection after that date, in spite of repeated spraying. We do not believe that the worms have in these instances eaten the poison and escaped death, even though only two pounds to fifty gallons were used. We do believe, however, that when the weaker solutions are used a thinner coating is left on the apples, a coating in which crevices appear more quickly, thus offering an entrance to the worm too minute to be apparent to the naked eye but plenty large enough for the tiny larvae. We hope to carry this test farther, as it promises to be one of the most important bits of information discovered in our work.

Relative Importance of Sprays Applied at Different Times During the Season.

We believed at the outset that no results of value would be obtained by applying only the calyx spray. Consequently this experiment was omitted. At the beginning of the season five sprays were the limit assigned to any one plot. Later in the season the program was changed slightly and six sprayings of lead made on one plot and seven on another. The results of the additional sprays did not appear in any marked degree to justify their application, although one additional tpray, making six in all, would have been justified had it been applied early in August during the period already referred to as the period of heaviest infestation. While Plot T, with 82.52 per cent clean fruit, shows a much higher proportion of clean fruit than Plot B, for example, this must be discounted to a certain extent because Plot T, like one of the check plots, was located where the dust from the road had an opportunity to coat the apples heavily. On Plot K, where the dust was not a factor, there was only 6.7 per cent more clean fruit than on Plot B, which received two applications less.

On Plot J the calyx spray was omitted and five sprays applied afterwards. It will be noted that the percentage of calyx worms was high, 7.9 per cent, the percentage of side worms being 22.25 per cent. However, this plot had 5.65 per cent more sound fruit than Plot I, in which the third spray, often termed the "first intermediate spray," was omitted, four other sprays being applied. Any attempt to carry the deductions farther brings confusion, and we can only say that if we are to depend upon the results of these experiments as a guide, we would hesitate to omit any spraying in this district. Different results might be obtained where the infestation is light, but we are now dealing with a district where there is a continuous succession or, perhaps, procession, of worms from the time of the first hatch until cold weather sets in. The only safe method would be to apply the calyx spray, the first brood spray, the first intermediate spray, the second brood spray, and at least one, and possibly two, additional sprays at intervals of about fourteen to eighteen days, depending on temperature and the way in which the young worms are hatching. After the second brood spray it would be necessary to make very careful observations.

Powdered Lead Arsenate.

Powdered lead arsenate justified its increased popularity. In our 1916 report we prophesied that the dry arsenate sales would increase very materially during the coming year. That they would make a gain of 1000 per cent was beyond belief, but by consulting our report on sales of spray material it will be seen that they did. While we have been glad to recommend the dry lead because of its better storage qualities and the greater ease with which it is handled in the field, we did not attempt to attribute to it any other qualities which would give it preference over the paste lead. However, our results not only in the Ross orchard, but in other experiments as well, indicate that the dry lead is more effective as a deterrent to the codlin moth. This is very evidently not due to any chemical differences, but is due, we think, to the fact that the powder stays in suspension better, not so much in the spray tank, where the artificial agitation should keep any lead in fair suspension, but after it has reached the fruit and foliage. This would give a more even coating. We have never taken much stock in complaints that certain brands of lead are chemically sub-standard, but we have believed, and still do believe, that there is a difference in the efficiency of leads, sometimes a very considerable difference, due entirely to their physical texture. If one pound of powdered lead equals two pounds of paste lead, the results on Plots B and D should be equal, providing always that all other contributing factors are equal. The tables show, however, that the powdered lead on Plot D produced over 14 per cent more clean fruit than the paste lead of equivalent strength, on Plot B. We do not wish to display any unwarranted enthusiasm for the powdered lead, but in addition to our own results we have already received the unsolicited testimony of over a score of growers. We would also call attention to observations made during the season which showed that the powdered lead was leaving a more even and a more readily discernible coating on the fruit than the paste.

Nicotine Sulphate.

More interest has been awakened by the experiments with nicotine sulphate for codlin moth control than by any other experimental work yet done in the Yakima Valley. This work was begun by Mr. F. E. DeSellem, then district horticulturist, in 1915, and was continued on a much larger scale in 1916 by Mr. DeSellem and Mr. J. C. Folger. In 1915 the work was carried on in a badly infested orchard and the results were better with nicotine than with arsenate of lead. Only four trees were sprayed with nicotine, however, and the solution used, 1 to 400 for three of the sprays, was very strong. In 1916 the schedule was much more elaborate, the results being given in our Annual Report for 1916. In 1916 the principal argument in favor of nicotine in preference to the lead was that it not only controlled the codlin moth as effectively as any spray used, but also controlled the woolly aphis, which were very numerous in the orchard. This virtually classified it as a dual purpose spray. It was felt that if nicotine sulphate could be used as a dual purpose spray its value to the growers would be greatly increased, as it might be possible to save considerable expense when spraying for aphids and codlin moth together by omitting the lead arsenate which is customarily combined with the nicotine.

In the Congdon experimental plot the nicotine, as noted, was as effective against codlin moth as the lead, but it was no more effective, and in addition it is more expensive. However, the weakest solution of nicotine used in the Congdon orchard experiments was 1 to 1,024, so that we felt that if nicotine could be used at weaker strengths, 1 to 1,600, for example, or 1 to 2,132, the expense differential would be largely eliminated. For this reason our tests for 1917 were planned to compare varying strengths of nicotine sulphate, ranging from 1 to 800 to 1 to 2,132.

Unfortunately, the results at Buena do not corroborate last year's conclusions. Out of eight plots sprayed with nicotine sulphate solutions, only one, Plot S, produced as much clean fruit as Plot B, which was sprayed with arsenate of lead paste, two pounds to 50 gallons of water. All of the other nicotine plots, including Plot M, which was sprayed with a 1 to 800 solution, produced less clean fruit. To make the contrast even more marked, all but one of the nicotine plots received one more spray than Plot B, which should have given the nicotine some advantage even though it might have been only a slight one. The weakest solution, 1 to 2,132, used on Plot P, was the least satisfactory, only 18.4 per cent clean fruit being produced. The best results, as noted, were on Plot S, where a 1 to 1,024 solution was used with lime paste. The only conclusion that we can reach under the circumstances is that the nicotine under lower valley conditions is not as effective against codlin moth as arsenate of lead.

If the effect of the nicotine on the moth or larva is a paralysis of the nerve centers, caused by the volatile fumes, as suggested last year, it may be that its effectiveness is dissipated shortly after the application. To carry our hypothesis farther, if this is the case, it might prove effective for a few days against the worms but be valueless against a continued attack such as we invariably encounter in the lower valley.

We do not present these results as a conclusive argument against nicotine. The evidence to date is conflicting and the work should be carried on for another year at least. However, we must state frankly that our only conclusions are not very favorable to nicotine sulphate as a codlin moth control where infestation is heavy.

A report has just come to us that experiments recently carried on in Oregon by Prof. A. L. Lovett of the Oregon Agricultural College indicate that nicotine sulhpate has a very definite value as an ovicide. Our information is that in the experiment the check, or untreated eggs, showed 20 per cent mortality, the eggs sprayed with nicotine sulphate 1 to 1,200, 84 per cent mortality, and the eggs treated with the same strength of nicotine sulhpate, plus fish oil soap, 100 per cent mortality. These results, which have been verified, add to our explanation another very logical interpretation of the success of nicotine in lightly infested orchards and its non-success in a badly infested orchard where oviposition extended over a long period of time, a small percentage of the eggs only being present on the dates when the nicotine sprays were applied.

Calcium Arsenate.

Calcium arsenate is an arsenical spray which contains greater killing power than arsenate of lead. It has been looked upon with some suspicion because of its liability to scorch the fruit and foliage. A year ago it was used with excellent success and with scarcely any damage to the trees. Last year two different brands were used, the Rex brand at Buena and the Latimer brand in the McLeod orchard in Orchardvale. One pound to fifty gallons of water, as used in Plot G for five sprays, produced results superior to those on most of the other plots in so far as fruit free from infestation was concerned. The effect on the fruit and foliage, however, was unsatisfactory. Foliage burning was noted about the middle of July and by picking time a considerable proportion of the leaves had fallen and a burned area around the stems of some of the apples was noticeable. There was also a larger percentage of windfalls than on the plots sprayed with arsenate of lead or nicotine, this doubtless being due to burning of the stems. On Plot F, where calcium arsenate was used for the last two sprays only, the damage was much less than on G and H, where it was used throughout the season. On Plot H, where one-half pound of calcium arsenate to fifty gallons of water was used, the results were unsatisfactory from every standpoint, the infestation being nearly 30 per cent greater than on Plot G and the burning about the same. We believe, however, that the burning was in part due to the condition of the orchard, which was allowed to become very dry during the summer. This theory is supported by the results in the McLeod orchard, where the damage from burning was not so severe. The latter orchard was in vigorous growing condition throughout the season. We would not advise growers, at the present time, to use calcium arsenate in lieu of lead arsenate, excepting in an experimental way.

Distillate Oil Emulsion as a Control for Red Spider.

One other test was made in the Ross orchard which was not planned at the beginning of the season. During the summer many of the trees, particularly on the plots sprayed with nicotine, became very badly infested with red spider. A large percentage of the leaves dropped prematurely and the condition was serious. Finally distillate oil emulsion, at the rate of one and one-half gallons to 100 gallons of water, was applied and on the trees sprayed the spider was annihilated with a single spray. In many cases the trees put out new leaves. On the unsprayed trees the red spider remained for the balance of the summer. There was no burning caused by the distillate oil emulsion nor any other injury noticeable. This is of particular interest, as nicotine sulphate has been recommended by some authorities as a control for red spider. We have been convinced by work done in former years that it is ineffective in the Yakima Valley, and our experience this year appears to clinch the argument, as the trees sprayed six times with nicotine proved to be the worst infested trees. It is only fair to note that the Kentucky Tobacco Product Company, the manufacturers of the best known brand of nicotine sulphate, have never to our knowledge recommended their product for red spider control.

Powdery Mildew Experiments.

The tract selected in the McKee orchard on Selah Heights was subdivided into six plots, five of them spray plots and one an unsprayed check plot. As the greatest damage in this orchard in 1916 occurred on the fruit, counts were made at picking time and notations made of the percentage of clean fruit and of fruit showing mildew netting. Notations were also made during the growing season as to the condition of the foliage and twigs, particularly at the terminals. That the mildew was not controlled by climatic conditions is evident from the results on Plot A, the check plot, which produced only 5 per cent clean fruit and showed considerable mildew on all the terminals. The best results were obtained with three applications of iron sulphide on Plot E, but Plot C, which received three applications of atomic sulphur, was not very far behind. Where only two applications of iron sulphide or atomic sulphur were used, the results were much inferior. On Plot F, where atomic sulphur was used in combination with lime sulphur, some of the results were very good, all in all a little better than the same number of sprays with atomic sulphur or iron sulphide alone. It might be noted that the reason for using this combination was that in cool weather atomic sulphur sometimes proves ineffective, as it does not volatilize readily in cool weather. It was thought that the addition of a three-quarters degree solution of lime sulphur might cause more rapid volatilization. The results indicate that there may have been some slight advantage, though the difference is more marked on the fruit than on the foliage and twigs.

The conclusions that we would draw from our work on mildew are that the expense of a third spraying is justified by the results, at any rate in an orchard where the infection is pronounced. Moreover, the iron sulphide appears to be slightly more effective than the atomic sulphur and is also cheaper. We would also point out again that the climatic conditions in 1917 were much less favorable to mildew than in 1916 and there was less damage, as a rule, even in unsprayed orchards. In a normal or abnormally moist season, repeated sprayings would count even more.

During the coming season a product new to this valley, known as milled sulphur, will be on the market. This material is reported to have given good results in California and is recommended by Ballard and Volck, who carried on extensive experiments in mildew control in the Pajaro Valley. This will give us three materials which can be used with prospects of good success in the control of mildew.

Potato Experimental Work.

During the season of 1916, and to a lesser extent in 1915, also, considerable trouble was experienced by the growers with various potato diseases. Because of the interest aroused and urged by a number of growers, the horticultural department obtained permission from the Board of County Commissioners to establish two experimental plots, one at Sunnyside and the other near Toppenish, Washington, on the Yakima Indian reservation. Old alfalfa ground was procured for both plots. In anticipation of this work several potato fields were visited at harvest time in the fall of 1916 and some 750 pounds of tubers were carefully selected from these fields to be used for seed. Potatoes were also purchased and shipped in from other states and from other parts of this state, some being from irrigated and others from non-irrigated sections.

The purpose of the experiments were as follows:

1. To discover how best to reduce the amount of fusarium wilt and rhizoctonia, thereby increasing the yield and storage qualities.
2. To find if it is necessary to plant imported seed in order to produce maximum crops and, if so, which is preferable, irrigated or non-irrigated seed.
3. Whether it is possible to grow high quality seed on non-irrigated land in the Yakima Valley.
4. Whether it is possible to grow first quality seed under irrigation by late planting.

The results of these experiments, while not as satisfactory as was hoped for, are, at any rate, a step in the right direction.

To answer the first question, eleven different lots of potatoes infected with rhizoctonia were treated with corrosive sublimate solutions of different strengths for varying lengths of time. Before planting, the stem end was cut from the tubers and where a trace of fusarium was found further cuts were made until the potato appeared clean, the knife being disinfected before the last cut. In spite of this precaution a large percentage of the crop showed fusarium. In the results it was notable that at a ratio of one-fourth of a pound of corrosive sublimate to thirty gallons of water, seed treated from one to one and one-half hours produced results fully as satisfactory as those obtained when the seed was treated two hours or with a stronger solution.

On account of water getting into the plot at Toppenish and flooding the ground which was conducive to common scab on all plantings except the July planting, results there were not as satisfactory as they might have been. Canada Burbanks infected with powdery scab, which had been planted in the plot showed common scab, but no trace of powdery scab. One of these lots, treated with formaldehyde, one pint to thirty gallons of water, showed no signs of scab. Another lot treated with corrosive sublimate one-fourth of a pound to thirty gallons of water was also free from scab.

To answer the second, third, and fourth questions, seed was obtained from several sources. Seed was obtained from one farmer near Sunnyside from potatoes planted June 28, 1916, other seed from the same locality from a farmer who planted July 1, 1916. These two lots were planted in the experimental plots next to seed which had been shipped direct from Minnesota and the home-grown seed produced equally good yields with a smaller percentage of fusarium wilt and rhizoctonia. Seed was also obtained grown without irrigation from early plantings in the Rattlesnake Hills, north of Sunnyside, and this was planted beside imported Minnesota seed. The yield was quite similar, but there was fully as much infection in the home-grown seed as in the imported seed. However, non-irrigated seed from Oregon produced much more satisfactory yields than from irrigated districts.

Seed from Minnesota and other non-irrgated sections and late planted seed from the Yakima Valley showed equal vigor, rows of these showing across the fields before other potatoes were up.

It was also noted that seed planted fifteen inches apart in the row yielded more than that planted thirteen inches or eleven inches, and that planted thirteen inches apart more than that planted eleven inches.

A part of the Sunnyside plot was planted July 7th and a part of the Toppenish plot July 11th and 12th. Before frost killed the vines, all hills in each plot of late planting that appeared to be free from disease were marked by stakes and dug separately and the smooth potatoes true to type were selected and stored for seed. This seed should prove much superior for experimental work in 1918 than any we were able to obtain this year. However, so many potatoes of the July planting failed to come up that it is a question whether a good stand can be obtained by planting so late. It is probable, however, that the excessive heat at that time, 100 degrees in the shade, was responsible for this by causing too rapid evaporation and consequent drying of the surface of the ground.

A great deal of the credit for the results obtained should go to Mr. F. E. DeSellem, formerly inspector in this district, as the work was planned by him and it was through his energy and determination that funds were obtained for carrying on the work.

Codlin Moth Banding Record.

There has been a great deal of discussion pro and con as to the advisability of banding apple trees to facilitate the trapping and destruction of descending codlin moth larvae. Some authorities believe that such a practice will pay, others believe that not enough larvae can be destroyed to compensate the grower for his labor. This depends largely on the locality and the age of the orchard. In the upper valleys it would be of doubtful value, but we believe that in the lower valley, particularly in the older orchards, it will do a great deal of good. A year ago band records were kept by Mr. Folger in an old orchard adjoining the Congdon orchards, and last year the work was continued in Mr. McLeod's orchard. Mr. McLeod has himself kept records in previous years and is very enthusiastic about banding.

Two hundred and thirty trees, representing several varieties, were banded with burlap sacking, the bands being put on early in July to make sure of the early members of the first brood. These trees adjoined the experimental plot and were sprayed by Mr. McLeod throughout the season. All bands were removed every two weeks, the larvae and pupae counted and destroyed and the bands replaced. Records of each tree were kept, which are reproduced here, as they are of more than passing interest, particularly as regards the comparative immunity or susceptibility of the individuals of the various varieties. A summary of some of the more essential features of these tables is appended also:

SUMMARY.

Number of trees banded	230
Total number larvae and pupae destroyed	7,147
Average number larvae per tree	31
Average number pupae per tree	4.9
Largest number of larvae on any single tree	289
Largest number pupae on any single tree	50
Largest number larvae and pupae on single tree	339
Date when largest number of larvae and pupae were found	August 10, 1917

Dust Sprays.

Dust sprays have created a great deal of interest throughout the country for a number of years. The first dusters could scarcely be termed a success, but recently improved machines have been placed on the market for which very strong claims are made, particularly by Eastern growers. There is little doubt, from the evidence at hand, that dust sprays can be applied more quickly and more cheaply than liquid sprays. The real test then is of their relative efficiency. The Niagara Sprayer Company is now manufacturing a dust machine which has received many favorable recommendations. At the request of their representative, Mr. F. A. Frazier, arrangements were made to try out one of these machines, which was turned over to us gratis with a supply of material. The testing ground chosen included several lots on Miles avenue, near the corner of the Summitview boulevard, the property of Mrs. A. C. Caldwell. There was only one objection to this site, which was the proximity of dwelling houses. If one would live at peace with one's neighbors one should not attempt to use dust sprays, particularly near their clothes lines on Mondays. In all other respects the site was satisfactory, as there was an abundance of scale and codlin moth. When counts were made in the fall we found about 15 per cent of the fruit infested with scale. Better results were obtained with lime-sulphur on adjoining rows which had practically the same initial infestation. In codlin moth control the best record was made on Plot A, which was sprayed four times. It produced 79.97 per cent clean fruit. We believe that a much more conclusive test could be given in a larger orchard, outside the city limits, where operations would not be cramped. While we are not prepared to recommend dusting in preference to spraying, we recognize that there are some good points about the dusting method which might be brought out more clearly by more detailed work.

(Signed) H. E. WATERBURY,
District Inspector.

CROP ESTIMATES.

For several years the division has gathered data from the different inspectors in the field, from growers, dealers, shippers, and organizations for the purpose of ascertaining the true condition of the crops and the probable yield. This information has been tabulated and reports sent out from time to time giving the results. The reports have been confined almost exclusively to the horticultural crops, but there is a growing demand for them to cover a broader field, including at least the staple crops such as potatoes, hay, corn, and small grains.

This information is demanded by shippers, dealers, fruit product factories, transportation companies, and the different government divisions; hence, it should be so gathered as to be as accurate as possible.

The information is freely given to the press and is always available at the offices of all district inspectors in their several districts, where the courtesies of their offices are always gladly extended to the public.

ORCHARD TREE CENSUS.

In order to get definite up-to-date information as to the scope of the horticultural interests of the state, it seemed advisable to take a tree census in the form of a careful survey of the horticultural resources of the state and collect statistics and general information that may be classified and show the extent of the industry. This work was begun in the fall of 1917 by the district inspectors of the different districts. We did not expect to include every tree in the state, but aimed to get a reasonably accurate count on every commercial orchard and a fair representation of the home orchards. In the principal commercial fruit counties the work is completed. In other outlying counties, where county commissioners have not furnished funds for a county horticultural inspector, the data is yet incomplete, but will be gathered from time to time and as rapidly as possible. Fully 95 per cent of the orchard trees in the state are included in these tables. The compilation is so arranged that it shows the varieties planted in earlier years. These may be compared with the later plantings which will show the tendency toward the best varieties for the different sections. In the early plantings about every variety listed was planted, but during the epoch of commercial tree planting beginning about 1900, planters specialized in varieties and planted large numbers of popular commercial varieties. The list varies somewhat in the different parts of the state, the greatest difference being in the varieties planted east and west of the Cascade range. This is necessary because of the variation in climatic conditions. Over the state Winesaps seem to predominate in numbers. Jonathans ranking second, with Rome Beauty and Delicious running close for third place. In some districts the Wagener is very popular, while Yellow Newtowns, Stayman, and Winter Banana are prominent. Esopus Spitzenberg is waning in poularity among growers because of its susceptibility to the ravages of insects and disease. There are several other varieties to be found in the planting in large numbers, some of which were planted as fillers, but are now being left as the permanent trees.

In the orchards west of the range the Baldwin, Northern Spy, King, and Gravenstein are very popular. Winter Banana is quite largely planted in some localities, but generally there is a very promiscuous, conglomerate list of varieties to be found in the older orchards, many of which it is impossible to identify and name. For this reason it is impossible to list the varieties as in the newer orchard sections of the state.

Pears are generally distributed over the entire state, Bartletts, Anjou, and Winter Nelis being the popular commercial varieties. Bosc is increasing in popularity, especially on the west side, where it is very successfully grown.

Peaches are confined mostly to the territory east of the Cascades, though a few can be found on the coast regions.

Prunes, plums, and cherries are grown generally over the entire state, although there are restrictions as to successful commercial localities.

The strawberry is very cosmopolitan and can be successfully grown in any part of the state, but the bush fruits predominate in the coast territory.

In the interior irrigated valleys the American butternuts, American and European chestnuts, filberts and hickory nuts, and English and Japanese walnuts are grown with varied degrees of success. In all of the coast counties these nuts are successfully grown. Commercial plantings are to be found in some counties.

ORCHARD CENSUS.

District 1—Walla Walla County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS	
	1 Year	3 Years	5 Years	9 Years	12 Years or Older		
APPLES—							
Arkansas	50	234	6	1,478	468	2,226	
Delicious	142	6,621	6,280	1,144	97	14,284	
Jonathan	220	8,198	7,008	24,191	1,461	41,078	
Newtown	110	3,495	3,878	2,782	1,366	11,631	
Rome Beauty	703	6,994	8,808	27,144	2,615	46,264	
Spitz (Esopus)	....	11	621	234	26	892	
Stayman	3	5,129	301	356	302	6,091	
Wagener	40	....	40	48	116	244	
Winesap	67	9,666	2,570	14,519	905	27,727	
Winter Banana	....	67	417	181	61	726	
White Winter Pearmain	72	100	80	553	267	1,072	
Grimes Golden	5	33	1,218	557	421	2,234	
Ben Davis	12	....	150	170	1,598	1,930	
Miscellaneous varieties	219	307	709	1,962	23,560	26,757	183,106
Crab Apples	15	1	....	....	....	16	16
PEARS—							
Miscellaneous varieties	8	542	886	538	658	2,632	2,632
PEACHES—							
Elberta	56	795	70	577	1,648	3,146	3,146
Crawford	....	112	20	309	555	996	996
Miscellaneous varieties	117	412	73	640	253	1,495	1,495
PLUMS AND PRUNES—							
Italian Prunes	17,978	4,962	448	3,425	23,703	50,516	50,516
Miscellaneous varieties	25	26	....	530	932	1,513	1,513
APRICOTS—							
Miscellaneous varieties	6	10	3	15	28	62	62
CHERRIES—							
Bing	48	604	....	658	980	2,290	2,290
Lambert	12	218	7	268	206	711	711
Royal Ann	290	44	....	360	1,054	1,748	
Miscellaneous varieties	28	60	15	478	510	1,091	5,839
GRAND TOTAL	....	....	....	....	....	....	252,322
OTHER FRUIT—							
Acres Grapes	....	87.5	4	1	....	92.5	
Acres Bush Fruit	24	....	....	....	....	24	
Acres Strawberries	9	....	....	....	....	9	
Total acres	....	....	....	....	....	....	125.5

ORCHARD CENSUS.—Continued.

District 1—Asotin County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS	
	1 Year	3 Years	5 Years	9 Years	12 Years or Older		
APPLES—							
Arkansas				15	50	65	
Delicious	35			96	25	146	
Jonathan	6	29	3,500	555	128	4,218	
Newtown	6	100	5,250	265	48	5,669	
Rome Beauty	20	332	5,250	563	471	6,636	
Spitz (Esopus)			3,500	33	79	3,612	
Stayman	10		14,000	135	100	14,245	
Wagener				26	11	37	
Winesap		123	1,500	59	47	1,729	
Winter Banana	10	313		13	7	343	
White Winter Pearmain				10	2	12	
Ben Davis					4	4	
Miscellaneous varieties		6		98	296	400	37,116
PEARS—							
Miscellaneous varieties	44	16		76	263	399	399
PEACHES—							
Elberta				525	3,006	3,531	
Crawford				193	1,473	1,666	
Miscellaneous varieties				302	1,991	2,293	7,490
PLUMS AND PRUNES—							
Italian				11	601	612	
Miscellaneous varieties				54	1,973	2,027	2,639
Nut Trees	118						118
APRICOTS—							
Miscellaneous varieties		2		19	398	419	419
CHERRIES—							
Bing				16	4,415	4,531	
Lambert				22	837	859	
Royal Ann				20	1,314	1,334	
Miscellaneous varieties		18		1	487	488	7,212
OTHER FRUIT—							
Crabapples	4					4	
Quince	3					3	7
GRAND TOTAL							54,423
Strawberries	1 A.					1 A.	
Bush Fruit						4.5 A.	
Grapes						1 A.	
GRAND TOTAL							54,423

ORCHARD CENSUS.—Continued.
District 1—Columbia County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS	
	1 Year	3 Years	5 Years	9 Years	12 Years or Older		
APPLES—							
Arkansas				956		956	
Delicious							
Jonathan		150	6,412	4,046		10,608	
Newtown		15	5,735	8,628		14,378	
Rome Beauty		650	7,600	12,950	100	21,300	
Spitz (Esopus)				600		600	
Stayman							
Wagener							
Winesap				200		200	
Winter Banana		100	10	135		245	
White Winter Pearmain							
Grimes Golden				135		135	
Ben Davis				170		170	
Miscellaneous varieties			14	6,600	775	7,389	55,981
PEARS—							
Miscellaneous varieties					75	75	75
PEACHES—							
Elberta		345	150	85		580	
Crawford							
Miscellaneous varieties			50			50	580
PLUMS AND PRUNES—							
Italian	500					500	
Miscellaneous varieties	1,000					1,000	1,500
APRICOTS—							
Miscellaneous varieties							
CHERRIES—							
Bing							
Miscellaneous varieties			10			10	10
GRAND TOTAL							58,146

ORCHARD CENSUS.—Continued.

District 1—Garfield County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS	
	1 Year	3 Years	5 Years	9 Years	12 Years or Older		
APPLES—							
Arkansas	13	5	....	3	515	536	
Delicious	14	15	....	1	5	35	
Jonathan	4	10	....	1	200	215	
Newtown	8	....	....	15	122	145	
Rome Beauty	12	510	....	5	72	599	
Spitz (Esopus)	12	20	....	....	332	364	
Stayman	....	....	....	....	161	161	
Wagener	17	20	....	....	248	285	
Winesap	3	10	....	....	84	97	
Winter Banana	10	10	....	1	69	90	
White Winter Pearmain	....	....	....	....	14	14	
Miscellaneous varieties	40	300	....	....	69	409	2,950
PEARS—							
Miscellaneous varieties	6,521	3,240	....	1,734	2,215	13,710	13,710
PEACHES—							
Elberta	440	1,805	....	6,320	7,913	16,478	
Crawford	225	1,200	....	5,670	7,463	14,558	
Miscellaneous varieties	2,210	1,141	....	3,843	5,820	13,014	57,760
PLUMS AND PRUNES—							
Italian	605	2,630	....	....	4,785	8,020	
Miscellaneous varieties	750	14,892	....	1,000	4,388	21,030	29,050
Nut Trees	24	37	....	58	60	179	179
APRICOTS—							
Miscellaneous varieties	1,092	1,380	....	672	1,907	5,051	5,051
CHERRIES—							
Bing	160	247	....	285	1,459	2,151	
Lambert	....	100	....	160	258	518	
Royal Ann	....	129	....	25	1,284	1,438	
Miscellaneous varieties	....	6	....	60	503	569	4,676
OTHER FRUIT—							
Crabapples	1	1,500	....	....	4	1,505	1,505
Quince	24	18	....	....	24	66	66
GRAND TOTAL	....	....	....	....	....	....	114,947
Bush Fruit	....	14	....	....	....	14	
Strawberries	3 A.	....	....	....	....	3 A.	
Grapes	....	....	....	....	....	29.20 A.	

ORCHARD CENSUS.—Continued.

District 2—Spokane County.

VARIETIES	NUMBER AND AGE OF TREES				TOTALS	
	1 to 3 Years	5 to 8 Years	9 to 11 Years	12 Years or Older		
APPLES—						
Arkansas	....	1,013	133	....	1,146	
Delicious	1,708	13,402	5,800	122	21,088	
Jonathan	2,059	181,125	63,885	2,767	250,001	
Newtown	....	3,221	3,019	566	6,806	
Rome Beauty	4,206	128,730	59,507	3,393	195,836	
Spitz (Esopus)	203	5,457	3,792	30	9,482	
Stayman	200	3,267	1,349	50	4,866	
Wagener	1,670	110,014	54,904	3,290	170,878	
Winesap	624	12,292	6,536	280	19,741	
Winter Banana	3,919	10,511	2,439	62	16,811	
Miscellaneous varieties	586	78,078	18,954	3,016	100,429	877,084
PEARS— Total Pears	2,506	7,522	1,617	682	12,327	
Anjou	70	15	394	15	494	
Bartlett	2,436	7,507	1,223	667	11,833	12,327
PEACHES—						
Crawford	....	278	1,150	57	1,485	
Elberta	40	521	872	150	1,673	3,158
PLUMS AND PRUNES—						
Miscellaneous varieties	1,029	516	743	16	2,304	2,304
APRICOTS—						
Miscellaneous varieties	....	11	44	....	55	55
CHERRIES—						
Bing	34	569	2,333	15	2,951	
Royal Ann	28	258	254	363	903	
Miscellaneous varieties	....	140	869	....	1,009	4,863
GRAND TOTAL	....	....	....	....	....	899,791

These figures do not include "Arcadia."

ORCHARD CENSUS.—Continued.

District 3—Benton County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS	
	1 Year	3 Years	5 Years	9 Years	12 Years or Older		
APPLES—							
Arkansas	....	....	2,016	4,492	164	6,672	
Delicious	750	280	21,646	5,940	3,278	31,894	
Jonathan	....	150	24,596	62,600	15,838	103,184	
Newtown	....	....	1,116	12,218	31,030	44,364	
Rome Beauty	....	550	18,322	31,272	18,268	68,412	
Spitz (Esopus)	....	....	7,660	11,850	11,096	30,606	
Stayman	....	....	1,070	3,048	2,104	6,222	
Wagener	....	....	10	75	924	1,009	
Winesap	....	1,140	54,222	108,544	44,926	208,832	
Winter Banana	....	....	2,516	2,002	3,830	8,348	
Grimes Golden	....	....	150	284	1,036	1,470	
Gravenstine	....	....	35	125	155	315	
Yellow Transparent	....	230	678	488	964	2,360	
Other varieties	300	220	744	3,950	5,344	10,558	524,246
PEARS—		818	7,179	35,664	26,678	70,289	
Anjou	....	80	480	7,584	8,671	16,815	
Bartlett	....	288	5,668	14,866	12,807	33,129	
Comice	....	....	585	4,584	1,586	7,755	
Winter Nells	....	440	84	7,210	2,805	10,489	
Other varieties	....	10	362	1,420	309	2,101	69,229
PEACHES—							
Elberta	....	....	1,010	27,214	9,270	37,494	
Crawford	....	....	378	1,238	1,182	2,798	
Schlappy	....	....	110	2,240	930	3,280	
Hale Early	....	....	25	125	75	225	
Other varieties	....	....	384	1,238	1,980	3,602	47,399
PLUMS AND PRUNES—							
Italian	210	320	285	2,002	1,695	4,512	
Tragedy	350	400	1,560	3,476	30	5,816	
Hungarian	....	....	420	478	31	929	
Other varieties	25	....	210	222	66	523	11,685
APRICOTS—							
Tilton	25	....	24	86	182	317	
Other varieties	30	42	64	259	538	933	1,250
CHERRIES—							
Bing	3,644	132	468	636	3,512	8,392	
Royal Ann	144	22	186	244	2,106	2,702	
Lambert	20	20	174	298	802	1,314	
Other varieties	285	30	185	190	290	880	13,288
GRAND TOTAL	....	....	....	....	....	....	668,112
OTHER FRUIT—							
Grapes, all ages, 94,700 vines	....	....	....	....	....	176A	
Nuts	....	....	....	....	....	25A	
English Walnuts	....	....	225	450	....	675A	

ORCHARD CENSUS.—Continued.

District 3—Franklin County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS	
	1 Year	3 to 5 Years	5 to 8 Years	9 to 10 Years	12 Years or Older		
APPLES—							
Arkansas	....	10	20	300	....	330	
Delicious	....	192	924	480	....	1,596	
Jonathan	....	2,223	589	....	....	2,812	
Newtown	....	2,760	1,885	....	....	4,645	
Rome Beauty	....	2,052	445	610	....	3,107	
Spitz (Esopus)	....	2,792	1,135	710	....	4,637	
Stayman	....	10	65	....	....	75	
Wagener	....	....	51	....	....	51	
Winesap	....	4,682	2,365	1,410	....	8,367	
Winter Banana	....	10	15	....	....	25	
Grimes Golden	....	10	6	....	....	16	
Gravenstine	....	....	402	....	....	402	
Yellow Transparent	....	....	502	160	....	662	
Miscellaneous varieties	....	20	126	....	125	261	27,086
PEARS—		6,808	320	505	15	7,648	
Anjou	....	680	60	250	....	990	
Bartlett	....	2,672	260	255	15	3,202	
Comice	....	3402	....	....	....	402	
Winter Nelis	....	54	....	....	....	54	4,648
PEACHES—						1,61	
Elberta	....	904	1,735	670	....	3,309	
Crawford	....	634	1,112	420	....	2,166	
Hale Early	....	200	....	....	....	200	
Miscellaneous varieties	....	443	....	....	....	443	6,118
PLUMS AND PRUNES—							
Italian	....	10	35	100	....	145	
Hungarian	....	2	10	5	....	17	
Tragedy	....	....	....	....	....	....	
Miscellaneous varieties	....	18	5	5	....	28	190
APRICOTS—							
Royal	....	6	30	....	....	36	
Miscellaneous varieties	....	12	30	....	....	42	78
CHERRIES—							
Bing	....	12	579	160	....	741	
Royal Ann	....	5	329	55	....	389	
Lambert	....	5	60	20	....	85	
Miscellaneous varieties	....	16	42	45	....	103	1,318
OTHER FRUIT—							
Concord Grapes	600	....	....	1,575	....	2,175	
Campbell Early Grapes	600	....	....	1,525	....	2,125	
Miscellaneous varieties	125	....	....	480	....	505	4,805
English Walnuts	....	....	100	....	....	100	100
GRAND TOTAL	....	....	....	....	....	....	44,343

ORCHARD CENSUS.—Continued.

District 3—Adams County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS	
	1 Year	3 Years	5 Years	9 Years	12 Years or Older		
APPLES—							
Arkansas	....	....	....	....	....	....	
Delicious	....	....	....	225	....	225	
Jonathan	....	....	....	....	....	....	
Newtown	....	....	....	150	....	150	
Rome Beauty	....	....	....	1,250	....	1,250	
Spitz (Esopus)	....	....	....	230	....	230	
Stayman	....	....	....	725	....	725	
Wagener	....	....	....	....	....	....	
Winesap	....	....	....	4,998	....	4,988	
Winter Banana	....	....	....	....	....	....	
Miscellaneous varieties	....	....	....	477	4,350	4,827	12,405
PEARS—							
Bartlett	....	....	....	125	....	125	125
PEACHES—							
Elberta	....	....	....	150	....	150	150
GRAND TOTAL	....	....	....	....	....	....	12,680

ORCHARD CENSUS.—Continued.

District 4—Chelan County.

VARIETIES	NUMBER AND AGE OF TREES					Totals
	1 to 2 Years	3 to 4 Years	5 to 8 Years	9 to 11 Years	12 Years or Older	
APPLES—						
Arkansas	45	1,511	1,936	1,965	6,584	12,041
Delicious	10,081	18,592	139,632	35,651	7,696	211,652
Jonathan	2,300	10,113	79,708	63,129	29,425	184,675
Newtown	....	310	3,887	8,083	6,168	18,448
Rome Beauty	1,043	16,132	52,061	26,417	16,541	112,193
Spitz (Esopus)	53	518	26,613	55,374	24,516	107,074
Stayman	20	11,151	36,552	23,173	19,443	90,339
Grimes Golden	210	9	1,301	2,006	1,952	5,478
Winesap	4,504	23,001	202,092	133,587	42,482	405,666
Winter Banana	1,780	2,879	7,856	7,371	2,705	22,591
White Winter Pearmain	752	865	7,233	8,262	3,869	20,981
Ben Davis (Gano)	....	357	6,395	8,508	18,042	33,302
Crabs	62	175	1,632	244	529	2,642
Other varieties	271	1,096	9,474	16,805	30,758	58,404
Grand total	....	....	....	....	....	1,285,486
PEARS—	9963	11,729	31,212	9,078	1,133	83,115
Anjou	2,321	7,612	7,209	2,388	638	20,168
Bartlett	7,112	3,499	19,872	10,567	6,477	47,527
Winter Nelis	5	137	678	496	331	1,647
Other varieties	525	581	3,453	5,627	3,687	13,873
Grand total	....	....	....	....	....	83,215
PEACHES—						
Miscellaneous varieties	237	191	6,303	10,158	9,016	25,905
Grand total	....	....	....	....	....	25,905
PLUMS AND PRUNES—						
Miscellaneous varieties	3,879	108	3,913	1,267	3,706	12,873
Grand total	....	....	....	....	....	12,873
APRICOTS—						
Moorpark	796	1,282	1,636	2,143	844	6,701
Other varieties	3,242	158	2,670	2,655	1,151	9,876
Grand total	....	....	....	....	....	16,577
CHERRIES—						
Bing	262	81	827	2,082	4,535	7,787
Lambert	250	38	389	940	1,074	2,691
Royal Ann	....	....	245	1,244	1,718	3,207
Other varieties	57	83	531	1,355	1,229	3,255
Grand total	....	....	....	....	....	16,940

ORCHARD CENSUS.—Continued.

District 4—Okanogan County.

VARIETIES	NUMBER AND AGE OF TREES					Totals
	1 to 2 Years	3 to 4 Years	5 to 8 Years	9 to 11 Years	12 Years or Older	
APPLES—						
Arkansas	....	75	2,057	783	64	2,979
Delicious	2,686	5,657	58,955	4,546	30	71,874
Jonathan	340	9,226	63,797	12,530	621	86,514
Newtown	....	200	10,313	2,936	348	13,796
Rome Beauty	40	3,456	13,139	3,082	102	19,819
Spitz (Esopus)	304	2,141	47,142	12,772	560	62,919
Stayman	....	3,331	18,568	1,454	205	23,558
Grimes Golden	....	53	577	353	....	983
Winesap	502	8,493	127,727	21,893	178	158,798
Winter Banana	162	504	3,371	614	71	4,812
White Winter Pearmain	....	150	653	556	40	1,399
Black Ben (Gano)	....	837	2,234	769	335	3,675
Crabs	....	37	17	35	10	99
Other varieties	....	2,887	6,480	1,296	1,112	11,765
Grand total	....	....	....	....	....	462,985
PEARS—	173	2,229	7,294	2,502	184	12,382
Anjou	64	1,184	1,295	431	....	2,974
Bartlett	93	780	3,548	1,754	78	6,253
Winter Nelis	....	109	450	78	6	643
Other varieties	16	156	2,001	239	100	2,512
Grand total	....	....	....	....	....	12,383
PEACHES—						
Miscellaneous varieties	10	243	5,555	3,475	83	9,366
Grand total	....	....	....	....	....	9,366
PLUMS AND PRUNES—						
Miscellaneous varieties	2	24	507	74	62	669
Grand total	....	....	....	....	....	669
APRICOTS—						
Moorpark	5	19	358	28	1	411
Other varieties	4	13	1,868	532	39	2,456
Grand total	....	....	....	....	....	2,867
CHERRIES—						
Bing	62	12	146	139	101	460
Lambert	56	6	22	61	100	245
Royal Ann	....	16	72	70	5	163
Other varieties	78	208	1,996	564	338	3,174
Grand total	....	....	....	....	....	4,042

ORCHARD CENSUS.—Continued.

District 4—Douglas and Grant Counties.

VARIETIES	DOUGLAS				GRANT			
	Number and Age of Trees				Number and Age of Trees			
	1 to 4 Years	5 to 8 Years	9 to 12 Years	Total	1 to 4 Years	5 to 11 Years	12 or Older	Total
APPLES—								
Arkansas	90	530	92	712	....	4,007	....	4,007
Delicious	7,599	28,890	28,472	64,961	210	36,395	....	36,605
Jonathan	2,097	26,645	28,547	57,289	....	31.403	....	31,403
Newtown	90	797	2,226	3,113	....	12,508	....	12,508
Rome Beauty	1,662	9,525	6,878	18,065	166	25,934	....	26,100
Spitz (Esopus)	423	17,086	14,564	32,073	....	9,767	....	9,767
Stayman	600	11,494	7,810	19,904	....	25,247	....	25,247
Grimes Golden	75	289	254	618	....	2,430	....	2,430
Winesap	4,778	85,112	63,822	153,712	311	50,322	....	50,633
Winter Banana	1,203	4,427	3,979	9,609	126	3,150	....	3,276
White Winter Pearmain	807	1,706	1,407	3,920	....	5,112	....	5,112
Black Ben (Gano)	83	1,334	4,509	5,926	....	932	....	932
Crabs	111	240	55	406	....	....	....	....
Other varieties	242	5,991	3,987	10,220	....	11,021	450	11,471
Grand total	....	....	....	380,528	....	....	....	219,491
PEARS—	1023	7,786	6,061	14870	100	11,151	735	11,986
Anjou	435	1,846	545	2.826	....	400	620	1,020
Bartlett	396	4,768	3,905	9,069	100	9,595	115	9,810
Winter Nelis	12	58	265	335	....	655	....	655
Other varieties	180	1,114	1,346	2,640	....	501	....	501
Grand total	....	....	....	14,870	....	....	....	11,986
PEACHES—								
Miscellaneous varieties	126	7,814	6,099	14,039	....	2,077	590	2,667
Grand total	....	....	....	14,039	....	....	....	2,667
PLUMS AND PRUNES—								
Miscellaneous varieties	368	256	249	873	....	3,082	20	3,102
Grand total	....	....	....	873	....	....	....	3,102
APRICOTS—								
Moorpark	358	1,635	3,188	5,181	....	805	....	805
Other varieties	1,251	2,915	1,294	5,460	....	75	6	81
Grand total	....	....	....	10,641	....	....	....	886
CHERRIES—								
Bing	29	406	595	1,030	....	1,048	50	1,098
Lambert	6	336	151	493	....	528	25	553
Royal Ann	....	177	296	473	....	98	....	98
Other varieties	78	879	679	1,632	....	82	9	91
Grand total	....	....	....	3,632	....	....	....	1,835

ORCHARD CENSUS.—Continued.

District 5—Yakima County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS	
	1 to 3 Years	3 to 6 Years	7 to 10 Years	10 to 12 Years	12 Years or Older		
APPLES—							
Arkansas	2,118	5,147	12,920	9,343	2,516	32,044	
Delicious	10,480	38,843	55,314	929	1,279	106,845	
Jonathan	3,792	145,316	288,446	37,166	15,597	490,317	
Newtown	192	5,943	59,151	11,510	9,719	86,515	
Rome Beauty	1,538	68,094	97,399	27,336	11,150	219,332	
Spitz (Esopus)	403	24,316	85,692	16,596	10,891	137,898	
Stayman	1,153	2,484	12,777	5,353	2,710	23,477	
Wagener	241	27,679	29,375	4,771	790	62,856	
Winesap	16,756	157,225	512,918	67,922	21,679	776,500	
Winter Banana	546	1,276	6,670	1,119	88	9,699	
Ben Davis	....	356	1,329	2,964	8,881	13,536	
Grimes Golden	25	894	5,329	3,978	2,811	13,037	
White Winter Pearmain	356	501	1,243	925	1.836	4,861	
Miscellaneous varieties	1,619	5,947	26,583	16,833	22,185	73,264	2,050,181
PEARS—	24,359	102,467	303,110	44,811	19,371	494,118	
Anjou	4,492	8,225	14,218	1,703	1,097	29,730	
Bartlett	9,807	70,136	221,322	34,164	15,554	350,983	
Comice	391	1,720	10,959	3,060	103	16,233	
Winter Nelis	9,269	21,507	53,054	5,354	1,132	90,316	
Miscellaneous varieties	400	879	3,562	530	1,485	6,856	494,118
PEACHES—							
Crawford	70	901	9,106	1,233	751	12,061	
Elberta	2,042	20,693	179,558	24,603	15,396	242,292	
Miscellaneous varieties	2,119	8,759	30,533	7,023	1,528	49,962	304,315
PLUMS AND PRUNES—							
Italian	8,484	5,764	3,439	5,085	15,125	37,897	
Tragedy	11,828	7,060	3,920	676	460	23,944	
Miscellaneous plum and prune	3,053	3,618	1,584	769	1,426	10,450	72,291
APRICOTS—							
Miscellaneous varieties	2,467	658	4,442	1,040	419	9,026	9,026
CHERRIES—							
Bing	911	726	9,541	2,840	980	14,498	
Lambert	175	75	2,336	436	190	3,212	
Royal Ann	73	219	4,822	1,197	968	17,279	
Miscellaneous varieties	748	1,654	6,200	2,792	1,719	13,113	38,102
OTHER FRUIT—							
Miscellaneous varieties	20	427	4,144	1,268	1,519	7,378	7,378
GRAND TOTAL	....	....	....	....	....	....	2,975,411

ORCHARD CENSUS.—Continued.

District 6—Clarke County.

VARIETIES	NUMBER AND AGE OF TREES			TOTALS
	1 to 6 Years	6 to 10 Years	12 Years or Older	
Apples	6,698	29,818	48,184	84,700
Walnuts	1,842	2,834	2,460	7,136
Filberts	211	385	1,154	1,750
Almonds	7	....	82	89
Figs	....	8	10	18
Mulberries	10	....	....	10
Quinces	6	11	33	50
Chestnuts	....	....	25	25
PEARS— All varieties	2,051	2,751	22,084	26,886
Family orchards	2,696	6,697	40,945	50,611
PEACHES— All varieties	1,037	1,613	531	3,181
Grapes	....	....	....	18,850
PLUMS AND PRUNES— Miscellaneous varieties	165,451	99,598	390,941	665,990
APRICOTS— Miscellaneous varieties	....	4	16	20
CHERRIES— All varieties	598	1,385	5,842	7,925
GRAND TOTAL	....	....	....	867,241
OTHER FRUIT— Blackberries Raspberries Loganberries Strawberries	....	....	....	100 A.

ORCHARD CENSUS.—Continued.

District 6—Skamania County.

VARIETIES	NUMBER AND AGE OF TREES	TOTALS
	5 to 12 Years or Older	
APPLES—		
Arkansas	343	
Delicious	2,327	
Jonathan	648	
Newtown	2,205	
Rome Beauty	683	
Spitz (Esopus)	11,455	
Stayman	123	
Wagener	123	
Winesap	91	
Winter Banana	1,812	
Ortley	3,926	
Gravenstine	523	44,950
PEARS—	11,810	
Anjou	8,443	
Bartlett	1,575	
Comice	9	
Winter Nelis	499	
Miscellaneous varieties	1,284	11,800
PEACHES—		
Crawford	235	
Foster	401	
Elberta	204	
Mayflower	400	
Elton	184	
Other varieties	112	1,539
PLUMS AND PRUNES—		
Italian	136	
Other varieties	46	182
APRICOTS—		
Moor Park	5	5
CHERRIES—		
Bing	126	
Lambert	85	
Black Republican	18	
Other varieties	170	399
OTHER FRUIT—		
Walnuts	....	72
GRAND TOTAL	....	58,897

ORCHARD CENSUS.—Continued.

District 7—Lewis County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS
	1 Year	3 Years	5 Years	9 Years	12 Years or Older	
APPLES— Miscellaneous varieties	1,200	3,600	7,500	10,500	12,500	35,300
PEARS— Miscellaneous varieties	1,200	2,000	2,500	3,000	2,500	11,205 11,200 ✓
PEACHES— Miscellaneous varieties	25	200	250	100	100	675
Quinces	....	....	....	....	....	400
Walnuts	....	....	....	....	....	200
PLUMS AND PRUNES— Miscellaneous varieties	1,000	2,500	500	4,500	2,500	11,000
CHERRIES— Miscellaneous varieties	2,500	15	1,200	1,125	3,000	7,880
GRAND TOTAL	....	....	....	....	....	66,605
Bush Fruit	....	....	....	....	....	50 A.
OTHER FRUIT— Strawberries	200	....	....	....	....	200

ORCHARD CENSUS.—Continued.

District 7—Grays Harbor County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS
	1 Year	3 Years	5 Years	9 Years	12 Years or Older	
APPLES—						
Miscellaneous varieties	6	1,500	4,000	4,000	7,000	16,506
PEARS—						
Miscellaneous varieties	200	250	300	300	1,000	2,050
PEACHES—						
Miscellaneous varieties	50	50	55	40	10	215
PLUMS AND PRUNES—						
Miscellaneous varieties	75	200	225	450	2,500	3,450
Walnuts						100
Quinces						225
CHERRIES—						
Miscellaneous varieties	50	100	115	500	800	1,565
GRAND TOTAL						24,111
OTHER FRUIT—						
Strawberries						50 A.
Cranberries						150 A.
Bush Fruit						50 A.

ORCHARD CENSUS.—Continued.

District 7—Pacific County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS
	1 Year	3 Years	5 Years	9 Years	12 Years or Older	
APPLES—						
Miscellaneous varieties	200	225	350	1,500	2,500	4,775
PEARS—						
Miscellaneous varieties	75	100	150	200	400	925
Quinces	....	....	....	....	....	50
Walnuts	....	....	....	....	....	25
PLUMS AND PRUNES—						
Miscellaneous varieties	50	75	300	300	50	590
CHERRIES—						
Miscellaneous varieties	....	....	....	....	....	550
GRAND TOTAL	....	....	....	....	....	6,915
OTHER FRUIT—						
Cranberries	....	....	....	....	....	300 A.
Strawberries	....	....	....	....	....	10 A.
Bush Fruit	....	....	....	....	....	10 A.

ORCHARD CENSUS.—Continued.

District 7—Thurston County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS
	1 Year	3 Years	5 Years	9 Years	12 Years or Older	
APPLES— Miscellaneous varieties	1,500	2,500	4,000	10,000	20,000	38,000
PEARS— Miscellaneous varieties	500	750	1,200	3,000	1,500	6,950
PEACHES— Miscellaneous varieties	50	50	200	350	200	850
Walnuts	....	....	....	....	....	50
Quinces	....	....	....	....	....	100
PLUMS AND PRUNES— Miscellaneous varieties	50	150	225	2,000	3,500	5,925
CHERRIES— Miscellaneous varieties	400	550	1,000	1,000	500	3,450
GRAND TOTAL	....	....	....	....	....	55,325
OTHER FRUIT— Bush Fruit	....	....	....	....	....	20 A.
Strawberries	....	....	....	....	....	12 A.
Cranberries	....	....	....	....	....	10 A.

ORCHARD CENSUS.—Continued.

District 7—Mason County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS
	1 Year	3 Years	5 Years	9 Years	12 Years or Older	
APPLES— Miscellaneous varieties	300	500	1,000	2,500	3,000	7,300
PEARS— Miscellaneous varieties	100	175	250	325	400	1,250 1,200
PEACHES— Miscellaneous varieties	50	75	100	150	50	425
PLUMS AND PRUNES— Miscellaneous varieties	100	150	250	250	300	1,050
Nut Trees						50
CHERRIES— Miscellaneous varieties	100	100	200	325	375	1,100
GRAND TOTAL						11,125
Grapes						50 A.
OTHER FRUIT—						
Quince			200			200
Bush Fruit			20 A.			20 A.
Strawberries			15 A.			15 A.

ORCHARD CENSUS.—Continued.

District 8—Jefferson County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS
	1 Year	3 Years	5 Years	9 Years	12 Years or Older	
APPLES— Miscellaneous varieties						12,010
PEARS— Miscellaneous varieties						803
PLUMS AND PRUNES— Miscellaneous varieties						1,113
CHERRIES— Miscellaneous varieties						3,004
OTHER FRUIT—						
Strawberries						7 A.
Raspberries						5 A.
Blackberries						5 A.
Loganberries						5 A.

ORCHARD CENSUS.—Continued.

District 8—Clallam County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS
	1 Year	3 Years	5 Years	9 Years	12 Years or Older	
APPLES—						
Miscellaneous varieties						24,302
PEARS—						
Miscellaneous varieties						2,403
PLUMS AND PRUNES—						
Miscellaneous varieties						2,101
CHERRIES—						
Miscellaneous varieties						4,115
OTHER FRUIT—						
Strawberries						5 A.
Raspberries						6 A.
Loganberries						10 A.

ORCHARD CENSUS.—Continued.

District 8—Pierce County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS
	1 Year	3 Years	5 Years	9 Years	12 Years or Older	
APPLES—						
Miscellaneous varieties				75,180		75,180
PEARS—						
Miscellaneous varieties				20,160		20,160
PLUMS AND PRUNES—						
Miscellaneous varieties				6,211		6,211
CHERRIES—						
Miscellaneous varieties				9,010		9,010
OTHER FRUIT—						
Raspberries						1,055 A.
Blackberries						543 A.
Strawberries						97 A.
Loganberries						14 A.

ORCHARD CENSUS.—Continued.

District 8—Kitsap County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS
	1 Year	3 Years	5 Years	9 Years	12 Years or Older	
APPLES—						
Miscellaneous varieties						42,190
PEARS—						
Miscellaneous varieties						11,201
PLUMS AND PRUNES—						
Miscellaneous varieties						3,109
CHERRIES—						
Miscellaneous varieties						8,010
OTHER FRUIT—						
Strawberries						90 A.
Raspberries						10 A.
Blackberries						5 A.
Loganberries						5 A.

ORCHARD CENSUS.—Concluded.

District 9—King County.

VARIETIES	NUMBER AND AGE OF TREES					TOTALS
	1 Year	3 Years	5 Years	9 Years	12 Years or Older	
APPLES—						
Miscellaneous varieties						81,750
PEARS—						
Miscellaneous varieties						24,240
PEACHES—						
Miscellaneous varieties						3,692
PLUMS AND PRUNES—						
Miscellaneous varieties						17,960
APRICOTS—						
Miscellaneous varieties						369
CHERRIES—						
Miscellaneous varieties						27,795
OTHER FRUIT—						
Quince						714
Nuts						409
GRAND TOTAL						155,929

VARIETY ORCHARD CENSUS BY DISTRICTS—TOTAL NUMBER OF APPLE TREES.

APPLES	District 1	District 2	District 3	District 4	District 5	District 6	District 7	District 8	District 9	District 10 *	Totals
Arkansas	2,827	1,146	7,227	20,434	32,044	348					64,021
Delicious	14,666	21,088	34,015	376,123	106,845	2,327					555,064
Jonathan	56,119	250,001	105,996	440,639	490,317	648					1,343,720
Newtown	31,823	6,806	49,159	43,883	86,515	2,205					220,391
Rome Beauty	74,711	195,836	72,769	214,251	219,332	683					777,582
Spitz	5,468	9,482	35,473	249,650	137,898	11,455					449,426
Stayman	20,507	4,866	7,022	215,284	23,477	123					271,279
Wagener	566	170,878	1,060	5,787	62,856	123					241,270
Winesap	29,762	19,741	222,177	855,761	776,500	91					1,904,032
Winter Banana	1,404	16,811	8,373	36,985	9,699	1,912					75,184
Ben Davis	2,104			15,751	13,536						31,391
Grimes Golden	2,369		1,486		13,037						16,892
White Winter Pearmain	1,103			41,121	4,861						47,085
Gravenstine			717			523					1,240
Yellow Transparent			7,849								7,849
Gano				33,318							33,318
Ortley						3,926					3,926
Miscellaneous varieties	17,246	100,429	15,646	115,060	73,264	84,700	101,881	86,020	81,750		574,115
Totals	260,675	791,084	568,969	2,664,047	2,050,181	109,059	101,881	86,020	81,750		6,617,785

VARIETY ORCHARD CENSUS OF TREES BY DISTRICTS.

	District 1	District 2	District 3	District 4	District 5	District 6	District 7	District 8	District 9	District 10	Totals
PEARS—											
Anjou		494	17,805	25,337	29,730	8,433					81,799
Bartlett		11,833	36,331	32,057	350,983	1,575					432,779
Comice			8,157	4,771	16,233	9					29,170
Winter Nelis			10,533	5,220	90,316	499					106,568
Miscellaneous varieties	16,826			11,549	6,856	28,160	22,335	34,567	24,240		122,198
Total											822,514
PEACHES—											
Elberta	23,685	1,678	40,954		242,292	204					308,808
Crawford	17,220	1,485	2,954		12,061	235					33,955
Miscellaneous varieties	16,852		7,750	118,170	49,962	1,097	2,165		3,692		192,523
Total											535,286
PLUMS AND PRUNES—											
Italian	59,658		4,657		37,897						102,122
Tragedy			5,816		23,944						29,760
Miscellaneous varieties	25,570	2,304	1,497	11,103	10,450	666,185	22,015	12,534	17,960		747,603
Total											879,485
APRICOTS—											
Moor Park				32,725							32,725
Miscellaneous varieties	5,532	55	1,328	8,051	9,026	25					24,386
Total											57,111
CHERRIES—											
Bing	8,872	2,951	9,133		14,498	126					35,580
Lambert	2,088		1,399		3,212	85					6,784
Royal Ann	4,520	903	3,291		7,279	18					16,011
Miscellaneous varieties	2,172	1,009	983	28,003	18,113	8,274	14,495	23,139	27,795		104,518
Total											162,893
Crabapples	1,525			3,367							6,642
Quinces	69			300	340	50	975		714		1,473
Bush Fruits	41.50 A.					100 A.	100 A.	1,656 A.			
Strawberries	12.25 A.						275 A.	199 A.			
Nut Trees	532		23,475				425	149	409		
Grapes	123.7 A.		176 A.			18,850	5,000				
English Walnuts			25 A.			7,136					
Miscellaneous Fruit				425	7,878						
Filberts						1,750					
Almonds						39					
Chestnuts						25					
Figs						18					
Family orchard						50,611					
Cranberries							960 A.				
Total trees	185,121										

APPROXIMATE FIGURES FOR FOURTEEN COUNTIES—FRUIT TREE DATA FROM 1912 RECORDS, NOT INCLUDED IN PREVIOUS TABLES.

COUNTIES	Apple	Pear	Peach	Cherry	Plum, Prune	Apricot
Cowlitz	21,000	3,200	....	2,500	6,550	....
Ferry	28,000	7,500	....	1,800	1,000	....
Island	54,000	....	....	....	....	....
Kittitas	16,000	....	....	....	....	....
Lincoln	86,000	174,200	34,000	....	6,000	....
Pend Oreille	126,000	850	800	900	5,400	....
San Juan	50,000	70,000	....	3,500	6,800	....
Skagit	60,000	18,500	....	8,100	6,500	....
Snohomish	81,000	20,500	....	9,000	5,500	....
Stevens	33,000	23,000	12,000	7,300	13,200	....
Wahkiakum	6,550	4,950	3,900	1,250	5,500	....
Whatcom	40,000	7,900	....	8,300	5,600	....
Whitman	186,000	9,200	83,000	14,200	6,850	6,500

POLICE WORK.

The regulatory or police work has to do with the inspection of all warehouses, storerooms, orchards, markets, fruits, or vegetables, and if infection is found inspectors are empowered with authority to disinfect or if necessary to condemn and destroy any property which is or may become a menace to the horticultural interests of the state, or if any fruit found upon the market is misbranded as to grade or pack they see that the markings are changed to correspond with the grade of the fruit.

During the shipping season frequent visits are made by the inspectors to the packing houses, warehouses, and shipping points to ascertain if the grade and the pack conforms with the provisions of the law. If it does not, fruit is either repacked or else the grade markings are changed before the fruit can be shipped. The law provides for the giving of permits for fruit to be used for by-products. This privilege is sometimes abused by shippers purchasing cull fruit securing a permit to ship to certain by-product plants, and after the car is rolled, order it diverted to other points, sometimes to other states, where the fruit is sold in the open markets. When such cases are found within the state the inspector can seize and handle the fruit as conditions warrant. The law explicitly forbids the placing of wormy apples upon the open markets in the state and each year there are more or less arrests and convictions of peddlers and hucksters who try to evade this phase of the law.

CLEAN-UP WORK.

In all fruit sections there is more or less non-resident orchard property. which is a menace to adjoining orchards.

It is necessary to look over these properties carefully each year and ascertain if caretakers are giving them the proper attention, to keep them from becoming a harbor for pests.

When this condition arises it becomes necessary to do such cleanup work as is advisable. It may be pruning, spraying, or both, and in some cases general condemnation is ordered and the orchard removed so that it may not become a menace to the community.

Blight, San Jose scale, and some other of the most serious pests make more or less cleanup work necessary each year.

This work is usually done while the trees are dormant. Last season 156 notices were served, and where the owner or caretaker did not give the trees the proper attention the matter was handled by the inspection service and the cost charged against the property.

INSPECTION.

The inspection work consists in the careful examination of all orchards and nurseries within the state as far as available funds will permit, to ascertain if they are free from dangerous insects or disease. The examination of imported nursery stock, whether coming from other states or from foreign countries, the examination of commercial fruit to see if it is clean of pests and that it is graded and packed according to the grading rules of the state adopted for the current season. Potatoes and vegetables in general coming into the state from other states are inspected against tuber moth or other infestation.

WEEKLY REPORTS.

Weekly reports are made by all inspectors in which they designate the character of work performed for that period and report any matters coming under their observation which needs special attention. The following copy of the report shows the volume of the work done during the last nine months of the fiscal year, from October 1, 1917, to July 1, 1918. These reports give us a check upon the men in the field and keep us informed as to their general activities in the different parts of the state. Weather conditions such as frosts, severe wind storms, or hard freezes are reported, and any unusual prevalence of insect activity is noted.

Labor conditions at spraying or harvesting periods is reported, all of which is essential information that we must have if we keep in close touch with the general field conditions.

STATE OF WASHINGTON—DEPARTMENT OF AGRICULTURE.

DIVISION OF HORTICULTURE.

Following record is for nine months, October 1, 1917, to July 1, 1918:
The size of report blanks is 8½x14 inches.

	LOCALITY OR TOWN	INSPECTED		Demonstrations, Lectures, or Meetings	Letters Sent Out, Not Circulars	Telephone Calls	List of Farms Visited
		Orchards (Acres)	Nurseries or Crops				
Monday							
Tuesday		134,607 acres of orchards inspected.					
Wednesday		2,221 orchards inspected; acreage not given.					
Thursday		2,680 acres of nurseries and nursery crops inspected.					
Friday		372 nurseries and crops inspected; acreage not given.					
Saturday							
				148	6,085	6,271	10,217

Days and half days in office	518
Days and half days in field	2,134
Number of circulars sent out	23,258
Miles traveled by auto	86,715
Miles traveled by rail	9,904
Miles traveled by other conveyance	6,634

MATTERS NEEDING SPECIAL ATTENTION

Condemnation and clean-up notices sent, 158

The reverse side of this weekly report blank (8½ by 14 inches).

INSPECTION OF FRUITS OR VEGETABLES.

Date	GROWER OR SHIPPER	SOLD OR CONSIGNED TO	NUMBER OF PACKAGES		Inspection	Remarks. Disposition, Etc.
			Inspected	Condemned		
Nine months' summary of these reports, October, 1917, to June 30, 1918			308,732 57 cars	24,992 6 cars		
Packages repacked						2,058

NURSERY INSPECTION.

The inspection of nurseries and nursery stock is done mostly at the digging and shipping season, because this is the only time when the conditions of both stock and roots can be properly examined. This branch of the inspection is very important, as upon it depends the distributing of nothing but healthy stock. The inspection of foreign stock is given close attention in order that new pests from foreign countries may not be imported on the stock. Seattle is the principal distributing point for nursery stock in the Northwest. Mr. F. N. Rhodes has in charge both the federal and state inspection work at that point.

The law requires that all nurseries operating in the state shall have a state license. This is a protection to the purchaser of nursery stock because if he secures his stock from a licensed nurseryman, that nursery is under bond to produce healthy stock true to the name for which it was sold.

The following list shows the nurseries licensed for the years 1916-1917 and 1917-1918. The license fee is $5.00 a year and the bond requirement is $1,000.00:

LIST OF NURSERYMEN AND FLORISTS LICENSED TO DO BUSINESS IN THE STATE OF WASHINGTON FOR THE YEAR 1916-1917.

Aabling-Boyce Seed Co., 89 Pike Street, Seattle.
Art Floral Co.; C. Noji, proprietor, 94 Pike Street, Seattle.
Beall Greenhouse Co., Seattle.
Bear, C. H., 6420 Flora Avenue, Seattle.
Blossom Floral Co., Walla Walla.
Bonnell, J. J., 2601 East Galer Street, Seattle.
Boyd Nursery, Everett.
Broadway Floral Co.; L. Le Gros, proprietor, Everett.
Brown, E. E., Detroit.
Buchanan, J. A. and A. A., Quarnberg, Vancouver.
Burien Lake Nursery, 204 Second Avenue South, Seattle.
Burt, A. J., florist, 829 Riverside Avenue, Spokane.
Carver, Gleason A., 2324 North Fiftieth Street, Seattle.
Capital City Nurseries and Greenhouse, Olympia.
Capital Hill Floral Co., 1524 Fifteenth Avenue North, Seattle.
Capital Hill Floral Co., 1524 Fifteenth Avenue, Seattle.
Christopher Nurseries, Christopher.
City Floral and Seed Co., 1910 Hewett Avenue, Everett.
Columbia and Okanogan Nursery Co., Wenatchee.
Cornwall Park Nursery and Floral Co., Bellingham.
Dameyer, C., 603 Leary Building, Seattle.
Davis, W. H., Kirkland.
Driscoll, James A., 11 West Main Avenue, Spokane.
Everett Floral Co., 1814 Hewitt Avenue, Everett.
Evergreen Nursery, Third Avenue and Pine Street, Seattle.
Evergreen Nursery, Tacoma.
Ferndale Nursery, Ferndale.
Fremont Floral Co., North Fortieth and Evanston, Seattle.
Fugito, T., 407 Riverside Avenue, Spokane.
Furuya Co., M., Inc., 216 Second Avenue South, Seattle.
Gerhardt, O., Box 76, Riverton.
Heege, Otto, 1401 Trenton Avenue, Seattle.
Hinz, A. A., 618 South K Street, Tacoma.
Hoadly, C., Kennewick.
Hollywood Gardens, Inc., 1534 Second Avenue, Seattle.
Home Nursery Co., Richland.
Hopkins, J. G., Tukwila.
Hopkins, T. R., R. F. D. No. 1, Kirkland.
Horst's Floral Shop, Bellingham.
Hoyt Brothers Co., 11 Post Street, Spokane.
Hulseman, L. H., Lakeside.
Island Nurseries and Fruit Farm, Vashon.
James, J. H., 928 South Tenth Street, Pasco.
Kelley, A. A., nurseryman and gardener, Station B, Spokane.
Key City Greenhouses, Port Townsend.
Kincaid, J. W., Bellingham.
Kittle and Langlois, Ritzville.
Krause, H. E., R. F. D. No. 8, Spokane.

Lake Chelan Nursery Co., Chelan.
Lakeview Nursery, 1601 Fifteenth Avenue North, Seattle.
Lange, Paul E., 8513 Weedin Place, Seattle.
Latona Floral Co., 347 East Fifty-sixth Street, Seattle.
Lewis, J. W., Box 245, Sedro Woolley.
McCormick, Mr. H. B., 1121 High Street, Bellingham.
McCormack Brothers, Pacific and Fifteenth, Tacoma.
McCoy, L. W., Second and Marion Streets, Seattle.
Meadowdale Nursery, R. F. D. No. 1, Edmonds.
Methow Trading Co., Winthrop.
Moffet, Fred I., R. F. D. No. 1, Ellensburg.
Mt. Vernon Nursery Co., Mt. Vernon.
Nishitani, D., R. F. D. No. 1, Box 92, Seattle.
Northern Pacific Nurseries, Toppenish.
Ornamental and Fruit Nursery Co., Wapato.
Overman's Nursery, 29 Monroe Street, Spokane.
Payne, Frank E., Camas.
Pioneer Floral Co., 3118 Yesler Way, Seattle.
Prosser Nurseries, Prosser.
Pudor, O. M., Puyallup.
Puget Sound Nursery and Seed Co., Seattle.
Puyallup Nursery, Puyallup.
Rainier Nursery, Third and Pine Streets, Seattle.
Reimer's Floral Art Shop, 807 Riverside Avenue, Spokane.
Richmond Nurseries, Richmond.
Riegel, E. and W. I., Cooper, Vancouver.
Riverside Nursery; R. A. Jones, proprietor, Spokane.
Rosaia Brothers, 1003 Third Avenue, Seattle.
Rosecraft Fruit Farm, Sumner.
Sanved, Peter, nurseryman, 1803 Thirty-ninth North, Seattle.
Sea View Park Greenhouse and Nursery, 6539 California Avenue, Seattle.
Seattle Floral Co., Fourth Avenue and Denny Way, Seattle.
Seattle Nursery Co.; Gerald Carver, proprietor, Seattle.
Shomaker, Joel, Nellita.
Simpson, Chas. S., Yakima.
Slaughenhaupt, J. B., Kennewick.
Slauson, H. B., 5416 Morgan Street, Seattle.
Smith Floral Co., 1716 South Fifty-sixth Street, Tacoma.
Snohomish Nursery; W. J. Ricketts, proprietor, Snohomish.
Spokane Nursery; Otto Hubenthal, proprietor, Spokane.
Stapleton, Donart, Spokane.
Stephens, C. D., R. F. D. No. 4, Yakima.
Stitz, A. A., Everett.
Stuber and Richardson, 4852 Holly Street, Seattle.
Tate, C. P., Grandview.
Toppenish Nursery Co., Toppenish.
Turner, Garrison, 4320 Fourteenth Avenue Northeast, Seattle.
The Bon Marche, Second and Pike, Seattle.
The Burdett Co., First and Denny Way, Seattle.
The Northern Nurseries, Otis Orchards.
University Nursery and Greenhouse, 4008 Ninth Avenue Northeast, Seattle.
Waight, Chas. H., 2052 North Seventy-eighth Street, Seattle.
Washington Nursery Co., Toppenish.
Wenatchee Home Nursery, Wenatchee.
Westlake, T. E., care Westlake Public Market, Spokane.
White Salmon Nursery, White Salmon.
Whitney, F. A., 3846 Thirty-fourth Avenue West, Seattle.
Wibra, G. I., Chehalis.
Wingren, O. J., LaConner.
Woolworth & Co., F. W., 1106 Pacific Avenue, Tacoma.
Yakima & Columbia River Nurseries Co., Yakima.
Yakima Valley Nursery Co., Toppenish.
Young, W. D., Kennewick.
Young & Lester, nurserymen, Walla Walla.

OUTSIDE THE STATE.

Albany Nurseries, Albany, Ore.
Birchler, Henry, 1406 East Stark Street, Portland, Ore.
Bobbink & Atkins, Rutherford, N. J.
Butzer, J. J., 188 Front Street, Portland, Ore.
Capital City Nursery, Salem, Ore.
Clark Brothers, nurserymen, 287 Morrison Street, Portland, Ore.
Dreer, Henry A., 714 Chestnut Street, Philadelphia, Pa.
Eastern Nurseries, Jamaica Plain, Mass.
Gardner Nursery Company, Osage, Iowa.
German Nurseries and Seed House, Beatrice, Neb.
Kellogg, R. M. Company, Three Rivers, Mich.
Lafayette Nursery Co., Lafayette, Ore.
Meehan, Company, Thos. B., Dresher, Pa.
Milton Nursery Co., Milton, Ore.
Oregon Nursery Co., Orenco, Ore.

Pacific Nursery Co., Portland, Ore.
Pilkington, J. B., P. O. Box 242, Portland, Ore.
Portland Seed Co., Inc., Front and Yamhill Streets, Portland, Ore.
Portland Wholesale Nursery Co., 112½ Grand Avenue, Portland, Ore.
Quaker Nurseries, Salem, Ore.
Rose Valley Nursery, 1052 Corbett Street, Portland, Ore.
Russellville Nurseries, Inc., R. F. D. No. 1, Box 265, Portland, Ore.
Salem Nursery Co., Salem, Ore.
Sherbrooke, W. E., Cornelius, Ore.
Silva-Bergtholdt Co., New Castle, Cal.
Stark Bros. Nurseries and Orchard Co., Louisiana, Mo.
Storrs & Harrison Co., Painesville, Ohio.
Taylor & Co., H. S., Rochester, N. Y.
True-to-Name Nursery, Hood River, Ore.
The Villa Nursery, R. F. D. No. 1, Box 395, Portland, Ore.
Weed Landscape Nursery, Beaverton, Ore.
Wheelock, Alton R. and Herbert E. Congdon, North Collins, N. Y.

LIST OF NURSERYMEN AND FLORISTS LICENSED TO DO BUSINESS IN THE STATE OF WASHINGTON FOR THE YEAR 1917-1918.

Adams County—
Kittel, J. C., Ritzville.

Asotin County—
Lewiston-Clarkston Improvement Co., Clarkston.

Benton County—
Gardner, J. R., Richland.
Home Nursery Co.; Fred P. Freeman, proprietor, Richland.
Prosser Nurseries, P. E. Nickerson, proprietor, Prosser.
Slaughtenhaupt, J. B., Kennewick.

Chelan County—
Columbia & Okanogan Nursery Co., Inc., Wenatchee.
Hulseman, D. H., Lakeside.
Post, Fred L., Chelan.

Clarke County—
Buchanan & Quarnberg, Vancouver.
Hansen, Andrew, Vancouver.
Lewis, Mrs. Harriet C., Vancouver.
Luepke, Frank, Vancouver.
Palmer, Chester M., R. F. D. No. 3, Box 32, Vancouver.
Payne, Frank E., Camas.
Riegel, E. and W. I. Cooper, Vancouver.
Ward, A. A., Brush Prairie.

King County—
Aabling-Boyce Seed Co., Inc., 89 West Pike Street, Seattle.
Allen, F. B., 506 North Seventy-second Street, Seattle.
Araki, N., Elmgrove Street, South Park, Seattle.
Art Floral Co.; G. Noji, proprietor, 94 Pike Street, Seattle.
Bauer, Christian, 530 Twenty-eighth Avenue North, Seattle.
Beall Greenhouse Co., Vashon.
Bear, C. H., 6420 Flora Avenue, Seattle.
Bell, Frank J., 5216 Myrtle Street, Seattle.
Benson, E. G., 3600 Montlake Boulevard, Seattle.
Bonnell, J. J., 2601 East Galer Street, Seattle.
Burns Floral Co., 601 Third Avenue, Seattle.
Buxton, A. E., 7332 Wilson Avenue, Seattle.
Capital Hill Floral Co., 1524 Fifteenth Street North, Seattle.
Carver, Gleason A., 2324 North Fiftieth Street, Seattle.
Christopher Nurseries; John A. Stewart and Son, Christopher.
Davis, W. H., Kirkland.
Domeyer, C., 603 Leary Building, Seattle.
Dupea, Thomas, 3829 Renton Avenue, Seattle.
East Seattle Florist; S. E. Sanford, proprietor, Seattle.
Evergreen Nursery, Third and Pine Streets, Seattle.
Fabi & Cole, 2569 Fourth Street West, Seattle.
Fremont Floral Co., 1401 Trenton Street, Seattle.
Friday, H. E., Green Lake Station, Seattle.
Furuya Co., M., Inc., 2160 Second Avenue South, Seattle.
Gerhardt, O., Box 76, Riverton.
Goldsack, E. H., 5639 Holly Street, Seattle.
Hansen, H. M., 6539 California Avenue, Seattle.
Hollywood Gardens, Inc., 1534 Second Avenue, Seattle.
Hopkins, J., Vashon.
Island Nurseries anr Fruit Farm, Vashon.
Lake Burien Nursery; Charles Schoening, proprietor, Seattle.
Lakeview Nursery, 1601 Fifteenth Avenue North, Seattle.
Lange, Paul E., 6813 Weeding Place, Seattle.
Latona Floral Co., 347 East Sixty-fifth Street, Seattle.

Lilly Co., Chas. H., Seattle.
Lindley Nurseries; H. M. Lindley, proprietor, Seattle.
Madlem, Isaac F., 1208 Denny Way, Seattle.
Malmo, Chas., 3100 Rainier Boulevard, Seattle.
Matsuda, T., 6702 Fourteenth Northwest, Seattle.
McClimans, D. and Linnian M., 5401 Ravenna Avenue, Seattle.
McCoy, C. E., 4839 Brandon Street, Seattle.
McCoy, L. W., 900 Second Avenue, Seattle.
Melby's Floral Shop, 218 Pike Street, Seattle.
Metzell, Frank, 3510 Holly Street, Seattle.
Mochizuki, B., 5802 Ashworth Avenue, Seattle.
Mochizuku, S. K., R. F. D. No. 1, Box 305, Seattle.
Morgan, H. C., 3540 Kenyon Street, Seattle.
Morita, M., R. F. D. No. 5, Box 388, Seattle.
Neuse, Carl, 507 Thirty-fifth Avenue, Seattle.
Newell, Mrs. A. B., Kirkland.
Nishitani, D., R. F. D. No. 1, Box 92, Seattle.
Northwest Rose Co., Stall 38, Economy Market, Seattle.
Numakami, K., 602½ North Eighty-seventh Street, Seattle.
O'Brien, Philip D., 3118 Yesler Way, Seattle.
Pederson, Lambert E., 2583 Seventh Street, Seattle.
Puget Sound Nursery and Seed Co., 1622 Fourth Avenue, Seattle.
Queen City Floral Co., 1223 East Union Street, Seattle.
Rainier Floral Co., 500 Nevada Street, Seattle.
Rosaia, Felix, 1000 Third Avenue, Seattle.
Saito, K., R. F. D. No. 1, Box 352, Green Lake Station, Seattle.
Sanved Nursery Co., 1803 Thirty-eighth Street North, Seattle.
Scott & Son, 6533 Wilson Avenue, Seattle.
Seattle Floral Co., Fourth Avenue and Denny Way, Seattle.
Seattle Nursery Co., 4520 Sunnyside Avenue, Seattle.
Sheffield, Mrs. Geo., R. F. D. No. 1, Burton.
Slauson, H. B., 5416 Morgan Street, Seattle.
Stuber & Richardson, 4852 Holly Street, Seattle.
Sullivan, Chas. E., 1510 Third Avenue, Seattle.
The Burdett Co., First and Denny Way, Seattle.
The Sunset Nursery, 4323 Fifth Street Northwest, Seattle.
The Yokohoma Nursery, Ltd., L. C. Smith Building, Seattle.
Thomas Floral Co., 1003 Third Avenue, Seattle.
Turner, Garrison, 4320 Fourteenth Avenue Northeast, Seattle.
U. S. Trading Co., Pacific Building, Seattle.
University Floral Shop, 4309 Fourteenth Avenue Northeast, Seattle.
University Nursery and Greenhouse, 4008 Ninth Avenue Northeast, Seattle.
Waight, Chas. H., 252 North Seventy-eighth Street, Seattle.
Washington Floral Co., 1516 Fortieth Street North, Seattle.
Wessman & Strander, 1905 Fifth Avenue, Seattle.
Whendon, P., Kirkland.
Whitney, F. A., 3846 Thirty-fourth Avenue West, Seattle.
Wylie, Thomas, florist, 5138 Holly Street, Seattle.
Vashon Garden Company, Vashon.

Kittitas County—
Moffet, Fred I., R. F. D. No. 1, Ellensburg.

Klickitat County—
White Salmon Nursery; Horace E. Wray, proprietor, Klickitat.

Lewis County—
Wibra, G. I., 1530 Market Street, Chehalis.

Mason County—
Brown, E. E., Detroit.

Pierce County—
Evergreen Nursery; W. H. Biddle, proprietor, 1101 South Stevens, Tacoma.
Mainke, H. W., 1219 Sixth Avenue, Tacoma.
McCormack Bros., Pacific and Fifteenth, Tacoma.
Pudor, O. M., Puyallup.
Puyallup Nursery; A. Lingham, proprietor, Tacoma.
Rosecraft Fruit Farm; F. H. Brugelhaus, proprietor, Sumner.
Woodland Park Floral Co., Sumner.
Woolworth, F. W. & Co., 1106 Pacific Avenue, Tacoma.

Skagit County—
Mt. Vernon Nurseries; E. B. Chenoweth, proprietor, Mt. Vernon.
Wingren, O. J., La Conner.

Snohomish County—
Boyd Nursery Co., Everett.
Broadway Floral Co., Everett.
City Floral and Seed Co.; W. Wallmark, proprietor, Everett.
Everett Floral Co., 1814 Hewitt Avenue, Everett.
Meadowdale Nursery; P. H. Burdett, proprietor, Edmonds.
Ricketts, W. J., Snohomish Nursery, Snohomish.

Spokane County—

Burt, Albert J., Clemmer Theatre Building, Spokane.
Driscoll, James, 11 West Main Avenue, Spokane.
Hoyt Bros. Co., 11 Post Street, Spokane.
Kelly, A. A., nurseryman and gardner, Station B, Spokane.
Krause, H. E., R. F. D. No. 8, Spokane.
Overman's Nursery, 29 Monroe Street, Spokane.
Reimer's Floral Art Shop, 807 Riverside, Spokane.
Riverside Nursery, R. F. D. No. 10, Hillyard.
Rosalia Nursery; L. S. Kimm, proprietor, Rosalia.
Spokane Nursery, South 2009 Grand Boulevard, Spokane.
Spokane Seed Company, Inc., Spokane.
The Northern Nursery, West 1104 Carlisle Avenue, Spokane.
Turnley, J. H. & Son, North 801 Monroe Street, Spokane.
Westlake, T. E., care Westlake Public Market.

Thurston County—

Capital City Nurseries and Greenhouse; C. Klam, proprietor, Olympia.

Walla Walla County—

Blossom Floral Co., Walla Walla.
Young & Lester, Walla Walla.

Whatcom County—

Cornwall Park Nursery and Floral Co.; A. Allenbach, proprietor, Bellingham.
Ferndale Nursery; J. J. Rowe, Manager, Whatcom.
Horst's Floral Shop; Fred F. Horst, proprietor, Whatcom.
Kincaid, J. W., Bellingham.
McCormick, H. B., Bellingham.
Smith, John W. Macrae, 2315 Williams Street, Bellingham.
Thomas, Rockwell H., 1208 Sixth Street, South Bellingham.

Yakima County—

Downs, Warren, 409 South Fourth Street, Yakima.
Hamilton Nursery Co., Yakima.
Ornamental and Fruit Nursery Co.; John Ryken, manager, Wapato.
Simpson, Chas. S., R. F. D. No. 1, Box 158, Yakima.
Tate, C. P., Grandview.
Toppenish Nursery Co., Inc., Toppenish.
Washington Nursery Co., Toppenish.
Yakima & Columbia River Nursery Co., 210 Miller Building, Yakima.
Yakima Valley Nursery Co., Inc., Toppenish.

Out of State—

Albany Nursery Co., Albany, Ore.
Birchler, H., 1406 East Stark Street, Portland, Ore.
Bobbink & Atkins, Rutherford, N. J.
Burbank, Luther, Santa Rosa, Cal.
Butzer, J. J., 188 Front Street, Portland, Ore.
Carlton Nursery Co.; F. and A. D. Brooks, proprietors, Carlton, Ore.
Capitol City Nursery Co., Salem, Ore.
Dreer, Henry A., 714 Chestnut Street, Philadelphia, Pa.
Eastern Nurseries; Henry S. Dawson, proprietor, Holliston, Mass.
Kellogg, R. M., Co., Inc., Three Rivers, Mich.
Lewiston Flower Shop, Lewiston, Idaho.
Milton Nursery Co., Milton, Ore.
Oregon Nursery Co., Orenco, Ore.
Pacific Nursery Co., Inc., Portland, Ore.
Pilkington, J. B., P. O. Box 242, Portland, Ore.
Portland Seed Co., Inc., Front and Yamhill Streets, Portland, Ore.
Portland Wholesale Nursery Co., 112½ Grand Avenue, Portland, Ore.
Quaker Nurseries; C. F. Lansing, proprietor, Salem, Ore.
Routledge Seed and Floral Co., Inc., 169 Second Street., Portland, Ore.
Russelville Nurseries, Inc., R. F. D. No. 1, Box 265, Portland, Ore.
Salem Nursery Co., Inc., Salem, Ore.
Silva-Bergtholdt Co., New Castle, Cal.
Sonderegger Nurseries and Seed House, Beatrice, Neb.
Stark Bros. Nurseries and Orchard Co., Inc., Louisiana, Mo.
Sherbrooke, W. E., Cornelius, Ore.
Taylor, H. S. Co., Rochester, N. Y.
The Villa Nursery, R. F. D. No. 1, Box 395, Portland, Ore.
True-to-Name Nursery, Inc.; H. S. Galligan, proprietor, Hood River, Ore.

NURSERY STOCK INSPECTED 1917.

D indicates domestic, F foreign.

COUNTIES		Apples	Pears	Peach's	Plums and Prunes	Apricots	Cherries	Quinces	Nuts	Grapes	Raspberries	Blackberries	Strawberries	Miscellaneous Berries	Ornamental Trees, Shrubs, Vines	Garden Roots	Perennia's and Miscellaneous
Adams	D	5	2	1	1	......	......	......	......	12	......	......	......	......	306	......	......
	F	12	1	......	4	......	8	......	......	......	30	......	538	......	119	112	71
Asotin	D	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
	F	......	......	......	......	......	11	......	......	......	......	1	6	24	26	......	10
Benton	D	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1
	F	2,150	11	533	1,883	231	2,039	......	51	727	84	......	379	......	197	112	18
Chelan	D	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	8
	F	12,758	1,031	448	4,111	1,055	65	3	31	1,904	28	4	443	......	85	146	......
Clarke	D	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2
	F	103	82	36	775	19	36	5	16	28	22	22	1,135	24	64	55	52
Clallam	D	2	2	......	......	......	8	......	......	......	......	......	......	......	......	......	8
	F	19	6	1	3	......	8	1	1	1	20	......	629	......	29	110	......
Columbia	D	......	16	......	......	......	......	......	......	......	......	......	456	......	1	......	......
	F	......	12	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Cowlitz	D	34	......	......	983	......	17	......	......	60	3,100	......	500	172	......	......	......
	F	2,075	......	6	9	2	32	......	......	5	10	4	1,375	......	21	55	77
Douglas	D	......	......	......	......	......	8	......	......	......	......	......	24	......	......	......	3
	F	18	......	......	7	2	5	......	10	4	14	2	170	1	17	55	......
Ferry	D	......	......	......	......	......	......	......	......	......	......	......	871	......	......	......	......
	F	4	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Franklin	D	2	......	......	3	4	2	......	......	......	......	......	......	......	16	2	......
	F	17	3	......	1	......	......	......	......	......	10	......	415	......	26	55	......
Garfield	D	22	8	8	1	2	10	......	8	12	......	......	......	......	8	......	6
	F	5	4	5	1	1	......	......	2	......	......	......	......	......	8	2	1
Grant	D	4	4	......	8	......	......	......	......	......	......	......	......	......	......	......	1
	F	9	8	16	9	8	8	2	2	......	10	4	5	......	855	20	11
Grays Harbor	D	......	......	......	......	......	......	......	......	......	36	......	......	......	......	......	24
	F	229	82	......	59	1	62	1	4	21	30	16	1,605	190	356	279	234
Island	D	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	8
	F	......	......	......	......	......	5	......	......	2	......	......	2	......	6	......	8
Jefferson	D	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	7
	F	2	2	......	......	......	2	......	4	......	......	......	......	......	1	......	......
King	D	125	781	2	28	4	274	6	9	......	88	......	461	80	102	......	24
	F	2,986	961	59	2,196	27	1,828	61	67	588	151	16	1,645	114	450	55	1,171
Kittitas	D	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
	F	77	8	10	8	......	22	......	......	......	12	25	365	......	2	......	12
Kitsap	D	72	14	7	19	1	28	......	......	28	48	......	3,400	3	21	......	32
	F	35	12	3	3	2	1	......	......	......	20	......	838	......	33	50	2
Klickitat	D	2	1	1	4	2	14	......	......	......	6	1	12	......	12	20	......
	F	66	665	69	115	29	56	2	4	73	20	66	1,024	......	60	......	......

NURSERY STOCK INSPECTED 1917.—Concluded.

COUNTIES		Apples	Pears	Peach's	Plums and Prunes	Apri-cots	Cher-ries	Quinces	Nuts	Grapes	Rasp-berries	Black-berries	Straw-berries	Miscel-laneous Berries	Orna-mental Trees, Shrubs. Vines	Garden Roots	Peren-nia's and Miscel-laneous
Lewis	D																8
	F	267	65	20	99	28	3,075		57	46	63	30		48	427	55	82
Lincoln	D	84	10	2	15	6	54	1			30		350		599		
	F	73	64	312	26	37	28	5	1		151		660	160	57	315	25
Mason	D	2					3										5
	F	75	18	22	28	9	31	5	29	47		8	16	20	22	9	22
Okanogan	D																11
	F	395		12	6	6	10	3		59	20		351		35	105	73
Pacific	D				1										15	3	5
	F	9	3		6		1			11	10		1,315	24	324	16	
Pend Oreille	D																
	F	27	4		25		13				68		371		11	30	
Pierce	D	182	23	52	33	2	49	2	10	37			1,350	38	87		11
	F	745	155	44	217		507	20	3	2,410	1,462	1,100	819	2,086	3,035	103	1,378
San Juan	D										1		2		1		
	F																
Skagit	D	188	166	16	41	8	91	7	17	5	233		3,539	62	249		3
	F	321	2	8	13	10	306		3	4	23		486	431	97	102	43
Skamania	D																
	F	193	89	36	2	4	3	5	10		12		300	13	40	100	3
Snohomish	D	33	8	1	10		24		6	2	132		212	5	38		14
	F	65	19	16	20	2	46		8	8	59		12	17	141	257	401
Spokane	D																
	F	857	237	8	767	103	386	2	4	150	164	200	3,047	1,602	668	2,414	190
Stevens	D	8	12		4										4		
	F	75	8	6	1	1	23			10	22		2,199		21	55	
Thurston	D	489	182	29	197	15	304	12	49	97	513	198	3,250	2,174	95		14
	F	89	38	14	73	2	174	5	2	8	106	13	1,011	59	64	200	18
Wahkiakum	D																
	F	6	1	5	22		1		6		6	1	1		1		2
Walla Walla	D	27	15	20	24	6	32	6	5						6		2
	F	83	10	87	102	2			37	1,036	10	1	872	10	23	16	62
Whatcom	D	283	240	18	53	45	191	7	41	16	791	66	952	283	664		6
	F	206	614	5	107	5	244	1	1	80	156	12	2,487	2,714	1,380	75	796
Whitman	D	33	39	1	15	5	87			6	12		100		42	73	1
	F	146	22	6	65	31	97	2		196	24	9	899	64	234	90	53
Yakima	D																
	F	4,546	15,206	1,706	19,766	880	2,894	106	394	3,806	554	158	3,560	4,887	855		228
Totals		30,340	20,811	3,601	31,967	2,101	12,664	270	887	11,449	8,311	1,957	43,459	15,255	12,015	5,146	5,236

POTATO INSPECTION.

No branch of the inspection work is given closer attention than is the potato inspection, especially that part of it in connection with the inspection of California potatoes against the introduction of the potato tuber moth.

For four consecutive years Mr. F. N. Rhodes, inspector of the ninth district, has spent from four to eight weeks in California in the tuber moth infected districts inspecting shipments destined for Washington and other northern sections. Realizing what the injury to the early potato trade in Seattle and other points would be if the state placed an embargo upon California potatoes for its own protection, the dealers and commission merchants guaranteed to furnish expense funds for the maintenance of Mr. Rhodes in California during the shipping season of early potatoes, for the purpose of inspecting all shipments destined for Washington and other northwestern points. Their request has been granted. During his four years' work in the California fields we have been able to prevent any known infestation to become established in this state. Mr. Rhodes' personal report for 1918 explains the situation in detail:

Seattle, Washington, September 24, 1918.

Mr. M. L. Dean,
Chief, Division of Horticulture,
Olympia, Washington.

Dear Mr. Dean: I left Seattle, May 17th, 1918, for San Francisco, driving a Ford touring car from there to Los Angeles, a distance of 440 miles, going via Stockton, Merced, Fresno, and Bakersfield, arriving at Los Angeles May 23d, and inspected the first car of potatoes the following day. I saw from the very first inspections that the tuber moth was to be much more serious than any of the other three years I had been in California. During my five weeks' stay in the southern part of the state I visited and inspected many potato fields as well as carloads in the vicinity of Los Angeles, Beuna Park, Norwalk, Stanton, Fullerton, Anaheim, El Monte, Savannah, Baldwin Park, Arcadia, Pomona, Ontario, Chico, Upland; several places in San Bernardino County as far up as San Jacinto, a distance of about 120 miles from Los Angeles, also many potato growing sections in what is known as the San Fernando Valley. I traveled by auto about 3,000 miles from Los Angeles, Orange, and San Bernardino counties. By having my auto with me I was able to cover a great deal more ground this year than other years when I had to depend on being taken to the different districts where cars were being loaded by the shippers. I was asked to pass on a field of twenty-seven acres of potatoes at Pacomia in the San Fernando Valley, and upon inspection found the potatoes so badly infected with tuber moth as to be nearly worthless. This Japanese grower had paid $2.00 per sack for his seed, the field would average fifty sacks to the acre, yet he lost 90 per cent of the entire crop because of the serious tuber moth infection, many of the potatoes having as many as fifteen larva in them, and they were surely unfit for human consumption. I saw several fields of potatoes in the same district which were also in very bad condition. This district had tuber moth every year. Had the conditions this season been such that the movement of Southern California potatoes had been slow there certainly would have been a large loss from tuber moth, but the demand was strong and potatoes moved out fast.

I invariably found that the principal causes for tuber moth infection in Southern California to be: First, shallow planting, exposing the potatoes to attacks of the adults of moths which are night flyers and at which time many of the eggs are deposited on the exposed potatoes. Potatoes grown on heavy, cloddy land which bakes and cracks would invariably be found to be infected, and shallow planting on fine sandy soil would occasionally show some infection, but where the potatoes were on sandy soil and five and six inches deep, which was the case in a number of places, there was little and no infection in the early crop because neither the moth or the larva can get at them at this depth. I do believe that were potatoes in Southern California planted four to six inches in depth and grown only on fine sandy soil and when dug put in new bags, and taken off the field the same day, or else kept well covered, there would be little or no trouble on account of tuber moth. I have seen two fields of potatoes separated only by the highway, the soil in one field was fine sand and showed no tuber moth whatever; the soil in the other field was heavy, had become baked and cracked, giving the moth and larva an easy access to the potatoes, and these certainly were quite wormy. These southern potatoes should be dug and marketed as soon as they will stand shipment, and should not be held at all.

In San Joaquin County, where potatoes are grown on the delta or what is known as river lands, where plenty of water is usualy to be had, I seldom found the tuber moth in the early potatoes, but when grown on the higher dry lands where water is not plentiful they generally show some infection. San Joaquin County potato acreage this year is 20,000 acres, against 25,000 acres in 1917, and the average yield will go 125 sacks per acre, and I understand Geo. Shima, the California potato king, as he is termed, controls 7,500 acres out of the 20,000 acres. The yield in the Los Angeles district is not more than thirty to thirty-five sacks per acre.

I issued certificates as to the freedom from tuber moth on 206 carloads of spuds which were shipped to Washington, Oregon, Utah, Montana, Idaho, and Texas, and refused certificates on forty-five cars and in addition examined about twenty-five cars which were finally not shipped into territories requiring certificates. Figuring on an average of ten sacks cut and examined to each car I examined a total of 2,750 sacks, many times examining nearly all the potatoes in a sack. On a money basis of $800.00 per car right through, the total value of potatoes examined would be $220,000.00. Many cars of potatoes this season were from ten to eighteen days in transit to Washington points, when seven, eight, and nine days should have been the limit of time in transit. When a car of potatoes was inspected and passed at shipping point and reached destination in this state in six or seven days there would be little or no danger of eggs hatching and potatoes becoming infected in transit, but when a car is eighteen days in transit, as was the case in one car, there can be no assurance that potatoes would arrive at destination free from infection. California potatoes, especially, certainly should never be delayed in transit where it was possible to get them through, because aside from the danger of tuber moth hatching in transit the disease known there as "leakers" develops very fast in cars delayed in transit. Two years ago the iceing of Southern California potatoes was unknown; this year practically all southern stock moved to market under ice, which was a saving of many thousands of dollars to growers and shippers.

This year there were many more small potato growers in Southern California than other years, and a number of cars of potatoes contained as many as eight different growers, thereby making the thorough examination of a carload next to impossible.

For thorough inspection purposes not more than three to five different growers should be allowed in the same car, and then only one grower's stock on the floor of the car and the other grower's stock on the top decking and each lot marked, number of sacks, etc., so as to distinguish one from the other. Two certificates should be issued, one to attach to bill of lading, the other securely tacked on the inside of the car door.

The season is now over for California potatoes, and from the first shipment in May to date, Seattle received 254 carloads.

Yours truly,
(Signed) F. N. RHODES,
Horticultural Inspector.

"Safety First" is the motto for the State of Washington in connection with this tuber moth situation. We are yet free of this dangerous pest, and unless California revamps her laws so that thorough, drastic inspection by the state officials can be given, it will be necessary for Washington to adopt rigid measures for our own protection, even to the extent of placing an embargo upon all potatoes produced in the State of California.

Occasionally shipments have been sent from points which Mr. Rhodes could not reach. This season several cars were received with certificates of county inspectors attached, which were so seriously infected that they were either returned to the shipper at his expense, or diverted to other states, or confiscated. The state inspection authorities of California should have jurisdiction over these matters for their own protection.

FEDERAL GRADES.

The federal grading of potatoes was brought to the attention of the growers and dealers during the season of 1917. In co-operation with the state division of farm markets, under the direction of Mr. Asher Hobson, located at Pullman, inspection of car lot shipments was advocated and upon request of the grower, shipper, or dealer, inspection service was rendered.

The federal grading of potatoes is an advanced step toward better marketing conditions. The time is at hand when all farm products should be marketed under standard grades.

THE COLORADO POTATO BEETLE.

In July, 1916, an outbreak of the Colorado potato bettle was reported from Sunnyside.

Immediate attention was given the matter under the direction of F. E. De Sellem, who was then district inspector of district No. 5, in which the outbreak occurred. A force of men was put into the potato fields picking and destroying all adults, larvae, or eggs found. The potato fields were also carefully sprayed with arsenical sprays. A protective potato association was organized in the district and through their efforts in assisting the inspection force the work was very thoroughly carried out in 1917, with the result that but very few adults, larvae, or eggs were found. In 1918 none were found in that district, but in the second district in the vicinity of Walla Walla, an outbreak was discovered. Harry L. Miller, district inspector of that district, immediately took drastic measures, having all the fields and adjoining territory carefully gone over, and all fields of potatoes in which the beetles were found were thoroughly sprayed with arsenate of lead.

From these occurrences it is evident that similar outbreaks of this pest are likely to occur and it behooves every potato grower to report any findings of the pest at once to this department in order that measures may be taken to prevent its spread. Each year that this pest is kept out of the potato fields of Washingon means the saving of thousands of dollars to the growers in the cost of spray machinery, material, and labor.

The commercial shipments of potatoes for the year 1917 as reported by the several railroads in the state was 3,148 carloads, representing about 2,500,000 bushels. The value of this crop based upon the prices received represents an income that should not be placed in jeopardy by the activities of the Colorado potato beetle.

GRADE AND PACK CONFERENCE.

Under the provision of the law which provides for the grade and pack conferences, a meeting of growers and delegates was held at Spokane, November 25, 1916, at which time the regulations were formulated for the pack of 1917.

November 23, 1917, a similar meeting was held at the same place, at which time the 1917 grade and pack regulations were adopted for the 1918 crops. A very interesting discussion of "Federal Grades," promulgated by the Federal Bureau of Markets, was had during the meeting. Mr. S. H. Boddinghouse represented the federal department, and after freely and fully placing the matter before the meeting, promised further investigation of the question in other apple producing sections, hoping that in the near future federal apple grades would be nationally adopted.

STORAGE.

That proper storage facilities is one of the important adjuncts to the fruit industry cannot be denied. In all of the fruit districts of the state there should be more up-to-date storage plants.

It is not necessary that they be expensive iced storage structures, because frost-proof houses are being built with air-cooled ventilating systems which are giving satisfactory results.

In 1917 there were many more storage plants built, including commercial plants and common air-cooled houses in the different valleys than had ever been built in the state during a single season. Weather conditions and car shortages made the demand for more and better storage facilities imperative. Heavy losses during former shipping seasons were the result of insufficient storage facilities, and had it not been for the war conditions many houses of different types would have been built in 1918. There were some built.

The fruit tonnage is gradually increasing in the fruit sections, which makes a demand for increased storage facilities.

The following data was gathered during 1917, showing the available storage facilities and its distribution throughout the state:

STORAGE CAPACITY REPORT.

DISTRICT	Number Houses	ICED STORAGE		Temporary or Common Boxes	FROST PROOF	
		Boxes	Sq. Ft.		Boxes	Sq. Ft.
1.	29	....	256,140	242,000	185,500	....
2.	12	....	57,832	....	30,000	121,300
3.	20	19,000	....	....	188,000	....
4.	68	....	....	....	1,875,960	....
5.	64	1,886,500	....	24,000	1,568,000	....
6.	7	....	....	....	17,000	....
7.	....	....	....	....	....	....
8.	5	108,000	40,967	....	....	150,000
9.	4	528,500	202,045	26,373,900	....	168,070
10.	....	....	....	....	....	....
Totals	209	2,542,000	300,844	26,639,900	3,864,460	334,370

GREENHOUSES.

The greenhouse interests of the state are becoming to be of a considerable magnitude. Specialized florists are the greatest in number, yet many are growing both flowers and vegetables, some growing vegetables exclusively.

The growing of rhubarb and asparagus under glass or in sheds is very remunerative in several sections of the state.

The following table shows the value of the greenhouse industry to the state:

GREENHOUSE REPORT.

DISTRICT	Number of Greenhouses	Assessed Valuation	Square Feet Glass	Volume of Business in 1917
1	8	$66,185 00	199,850	$82,845 63
2	23	88,211 00	389,500	124,650 00
3	1	800 00	1,800	1,200 00
4	1	2,010 00	3,500	20,000 00
5	4	27,880 00	96,000	24,600 00
6	4	2,650 00	15,300	6,500 00
7	9	18,600 00	89,100	22,200 00
8	23	37,575 00	383,464	67,781 00
9	66	334,380 00	714,850	237,939 71
10	10	12,020 00	153,900	39,700 00
Totals	149	$594,811 00	1,996,764	$627,416 34

FRUIT PRODUCTS.

Probably no branch of the fruit industry has been more neglected in this state than that of the manufacturing of fruit products. There was a great development of these interests in 1917 and many plants of various kinds were put into operation. New canning plants, evaporators, juice factories, cider mills, and factories for the making of various other fruit products were built in many parts of the state. Where new factories were not built, unused buildings were remodeled and made into successful plants, until now there is a sufficient capacity for the manufacturing of these products to create a demand for all cull fruit in the state at remunerative prices. More plants are contemplated and in the process of construction for the 1919 campaign.

In 1915 cull fruit for cider purposes brought to the grower about $4.00 per ton. In 1917 it ranged in price from $7.00 to $10.00 per ton, some factories paying as high as $15.00 per ton and sent auto trucks to the orchards after them. The 1918 culls are bringing from $8.00 to $25.00 per ton, depending upon quality. The development of this branch of the fruit industry placed upon the market finished products which brought into the state several millions of dollars, and makes a home market for a grade of fruit which heretofore has been nearly a total loss to the grower.

The following table gives an idea of the scope of the industry. Yet it is difficult to get the tonnage consumed each year because of the rapid increase in the number of plants. At Sumner and Puyallup extensive canning plants have been in operation for several years. There is also a branch of this concern operating in Spokane. Libby, McNeill & Libby erected a large factory at Yakima in 1917 which consumed vast quantities of apples, pears, cherries, peaches, plums, apricots, and beans. Other products will be used by this plant as its equipment can be increased. There is also an extensive canning plant at Vancouver, and many smaller plants can be found in different parts of the state. The Washington Evaporated Food Company erected a large, commodious evaporating plant at Yakima in 1917 which consumed vast quantities of cull apples and vegetables. After the fruit season ended this plant did an extensive business in the evaporating of potatoes.

The largest fruit juice factory is at Olympia. They have a capacity of four to six thousand tons of apples annually. There are many other small cider and vinegar plants in the state:

FRUITS CONSUMED FOR BY-PRODUCT PURPOSES IN 1916 AND 1917.

(Tons)

District and Year	Apples	Pears	Peach's	Plums, Prunes	Apricots	Strawberries	Blackberries	Raspberries	Cherries	Grapes	Loganberries	Small Fruit	Miscellaneous
District 1—													
1916	633	18	2	....	....	....	....	....	30	....	....	....	....
1917	300	....	....	....	....	....	....	....	....	....	....	....	....
District 2—													
1916	5,957	12	....	20	....	24	....	....	92	....	....	13	....
1917	3,627	....	....	....	....	....	....	....	....	....	....	....	....
District 3—													
1916	141	....	....	....	71½	....	....	....	....	43	....	....	....
1917	140	....	....	....	....	....	....	....	....	205	....	....	....
District 4—													
1916	4,186	....	....	....	....	....	....	....	....	....	....	....	....
1917	2,261	10	17	....	....	....	....	....	....	....	....	....	....
District 5—													
1916	2,010	....	....	....	....	....	....	....	8,133	....	....	....	....
1917	15,733	1,365	966	....	....	....	....	....	....	....	....	....	....
District 6—													
1916	300	45	....	10	7	9	9	5	34	....	15	....	11
1917	450	70	....	40	....	30	12	16	39	....	....	....	....
District 7—													
1916	300	150	30	110	15	150	90	45	165	15	90	92	71
1917	450	180	....	300	....	180	150	75	375	45	75	19	....
District 8—													
1916	2,490	183	1	....	....	221	1,023	1,490	111	....	....	....	374
1917	2,318	150	68	31	....	150	1,024	450	164	....	....	53	231
Districts 9 and 10—													
1916	686	306½	3	6	20	55	31	156	109	14	53	....	53
1917	1,778	434	29	35	150	110	85	82	270	44	11	....	....

2923½

FRUIT EXPORTS.

In the value of production among the orchard fruits of the State of Washington the apple ranks first, the pear second, prune third, and the peach and cherry are close competitors for the next place. The apple has a wider range of adaptability than any of the other tree fruits and can be successfully grown under conditions which are directly adverse to some of the other fruits.

The age of the oldest apple trees in the state date back to the years 1825 and 1835. It is not difficult to find fruit trees in several parts of the state in good condition which were planted about that time. In 1854 a nursery was established near Olympia, where apple trees and other nursery stock was grown. In 1849 grafted fruit trees were generally distributed from this territory over the western part of the state. At that time about every variety known to the people living in the country was propagated and sold; hence there is a wider range of varieties in the older orchards. During the rapid development of the apple industry in the central and eastern portions of the state, beginning about 1900, the bulk of the trees in the state were planted, and the list was restricted to commercial varieties. The height of planting was reached in 1908 to 1910, and since that time planting has gradually dropped off until now the trees planted each year about equals those being taken out by natural conditions or otherwise. Of course, there are intermittent periods of activity in the planting of other tree fruits.

In 1910 Washington ranked sixteenth in importance as a fruit growing state, New York standing No. 1 and Missouri second from the standpoint of production. In 1917 Washington took the first place and produced more than a half million boxes more than New York and Virginia combined, which represented 19 per cent of the commercial crop of the country and 53 per cent of the boxed apple crop.

The commercial crop, indicated by the carloads for 1916 and 1917, is given in the following table; 1916 is based upon 650 boxes to the carload, 1917 at 756 boxes per car:

1916 65 [illegible] 13'
1917 75 [illegible]

CARLOAD FRESH FRUIT EXPORTS FOR YEARS 1916 AND 1917.

District and Year	Apples	Peach's	Pears	Plums, Prunes	Cherries	Apricots	Grapes	Currants	Gooseberries	Blackberries	Red Raspberries	Cranberries	Loganberries	Strawberries	Cantaloupes	Mixed
District 1—																
1916	635	52	8	350	63	8	9	......	......	......	......	......	......	......	......	......
1917	500	58	10	203	121	10	11	......	......	......	......	......	......	......	......	1⅛
District 2—																
1916	980	......	14	23	8	......	......	......	......	......	......	......	......	30	......	384
1917	472	......	8	15	14	......	......	......	......	......	......	......	......	3	......	290
District 3—																
1916	448	52	113	14	4	15	16	......	......	......	......	......	......	110	......	8
1917	901	170	150	7	7	6	20	......	......	......	......	......	......	50	......	......
District 4—																
1916	7,721	178	348	23	93	80	......	......	......	......	......	......	......	......	......	......
1917	7,225	103	275	13	85	58	......	......	......	......	......	......	......	......	......	588
District 5—																
1916	7,090	950	1,150	210	20	......	20	......	......	......	......	......	......	......	......	......
1917	9,122	1,965	2,126	263	135	25	5	35	......	......	......	......	......	......	225	......
District 6—																
1916	221	18	17	350*	2	6	......	......	......	......	......	......	......	40	......	8
1917	240	9	16	420*	1	2	......	......	......	......	......	......	......	35	......	16
District 7—																
1916	15	100†	8	3	7	......	1	......	8	4	1	2,000‡	5	9	......	......
1917	15	200†	6	10	14	......	2	......	10	7	2	3,500‡	3	12	......	......
District 8—																
1916	400	......	50	80	230	......	......	6	7	481	640	......	25	150	......	......
1917	500	......	40	20	200	......	......	6	8	400	540	......	20	120	......	......
District 9—																
1916	268	8	53	87	76	......	......	2	2	85	79	......	48	152	......	......
1917	103	4	7	50	24	......	1	2	2	24	63	......	55	198	......	......
District 10—																
1916	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1917	70	9	......	......	5	......	......	......	......	......	......	......	......	......	......	......
Totals	37,426	3,571	4,394	2,091	1,109	210	94	51	37	951	1,325	5,500	156	909	22	,295⅛

* Dry. † Box. ‡ Bbls.

STATE INSECTICIDE LAW.

The enforcement of the insecticide and fungicide law is a part of the duties of this division. The law creates a board, "which board shall consist of the Commissioner of Agriculture or the Assistant Commissioner, the director of the agricultural experiment station at Pullman, and three members of the agricultural experiment station to be appointed by the director, one of whom shall be an entomologist, one a plant pathologist, and one a chemist." The present personnel of the board is Prof. Geo. W. Severance, director of the experiment station; Dr. A. L. Melander, entomologist; Dr. F. D. Heald, plant pathologist; Prof. George A. Olson, chemist, and M. L. Dean, chief, division of horticulture.

All spray material sold or used in the state comes under the regulation of this board and must conform to its fixed standards. Samples may be analyzed by Chemist Geo. A. Olson, located at Pullman, at any time.

Each year the horticultural inspectors gather samples found upon the markets or in the orchards, have them analyzed, and if they are not up to requirements, their further use is prevented.

Frequently people think that they do not get proper results from the use of the spray materials which they use. If they will call the attention of the inspector of their district to the situation he will investigate the matter and determine whether the results obtained are due to adulterated material or to some other cause.

FAIRS.

As the State Fair is an adjunct to this department, the horticultural division each year installs and maintains an educational exhibit showing the different diseases and insect pests. Different spray accessories such as material and nozzles are shown; circulars and bulletins treating upon horticultural topics are freely distributed. Personal information is also given out in the way of discussion and the answering of questions.

The district inspectors in co-operation with commercial clubs, county fair associations, and county agents, render much assistance in the gathering and installation of county exhibits at the State Fair. In 1917 in the third district, Luke Powell, the district inspector, represented Benton County. I. R. Fletcher of Vancouver, together with Chat Knight, local inspector for Clarke County, made an exhibit from that county. E. F. Perry of Chehalis, in the seventh district, made an exhibit of charts, plates, and diagrams describing the principal diseases of fruits, potatoes, and other vegetables at the Southwestern Washington Fair, the Western Washington Fair at Puyallup, and the county fairs at Elma, Grays Harbor County; Morton, Lewis County; Shelton, Mason County, and Port Angeles, in Clallam County. Henry Huff of the eighth district, located at Sumner, represented Pierce County. F. N. Rhodes and J. C. Eakle of Seattle made a display for King County.

In 1918 the above mentioned counties were represented. Mr. E. F. Perry assisted the Southwestern Washington Fair Association in making a very elaborate display. Mr. Huff assisted Mr. J. M. Hutchinson in making a display from Jefferson County. Other counties were represented at the fair, in which the inspectors rendered more or less assistance.

The chief of this division and the district inspectors each year are called upon to act as judges in the awarding of prizes in the agricultural and horticultural divisions at the county fairs in many parts of the state.

Encouragement of local fairs and participation in the State Fair is a part of the work of all employees of this division because the fairs are deemed of very great importance in the agricultural development of the state.

Respectfully submitted,
M. L. DEAN,
Chief, Division of Horticulture.

SEED LABORATORY REPORT.

REPORT OF THE SEED LABORATORY FOR THE PERIOD JULY 1, 1916-JUNE 30, 1918.

NUMBER OF STATES WITH SEED LAWS.

Washington is one of twenty-six states having seed laws. The states are: Nebraska, Wyoming, Oregon, Iowa, in which the laws are administered by the dairy and food commission.

North Dakota, Montana, Idaho, New Jersey, Kentucky, Minnesota, under the jurisdiction of the state experimental station, but in most cases under a seed commissioner.

North Carolina, New York, New Hampshire, Ohio, Tennessee, Maine, Wisconsin, Pennsylvania, Michigan, South Carolina, Washington, Maryland, Louisiana, Vermont, Virginia, and West Virginia, the work is under the state department of agriculture, as also in several instances are the states which are administered through the dairy and food commissioner.

Six come under the experimental station and twenty, either directly or indirectly, under the department of agriculture.

THE LAW OF THIS STATE.

The principal provisions of the law are as follows:

1. The inspection of commercial seed exposed for sale in the various seed markets of the state.
2. The correct labeling of all seed sold or offered for sale in the state, provided same is sold in packages of one pound or more.
3. That seed offered for sale within the state must not contain the following weeds: Canada thistle, wild oats, dodder, corn cockle, wild mustard, charlock, or quack grass.
4. The establishment of a laboratory to test seed for the citizens of the state.
5. The enforcement of the law and penalties for the violation thereof.

THE LABORATORY.

The seed laboratory is well equipped and similar in every respect to those in use by the United States Department of Agriculture; we are prepared to give seeds both the purity and germination test, and further in every way possible, the improvement and safeguarding of Washington agriculture along agronomic lines.

SUBMITTING SAMPLES.

Tests are made gratis to all bona fide users, while commercial seed houses and growers are required to pay a fee of 50 cents for a purity and germination test. Samples of seed submitted for test must be representative of the lot from which they are taken. If taken from a sack with a sampler, some should be taken from the top, center, and bottom of the sack, and at least 5 per cent of the sacks constituting the lot be so sampled; from the amount obtained a thoroughly mixed sample should be taken. The same holds good for samples taken from bins.

About a good sized handful should then be carefully sealed and mailed to the Department of Agriculture at Olympia, accompanied by a letter stating the test desired, also the name of the seed and the name and address of the sender. Tests are immediatly made and results reported.

LABELING.

One of the most important provisions of the law is labeling, as it constitutes one of the strongest safeguards possible to protect the purchaser. Seed should be labeled "Standard" if sufficiently good to warrant such labeling; if not, it must be labeled with the actual percentage of purity and germination.

In the inspection work failure to comply with the law in this regard is more noticeable than any other departure from the regulations. The larger and more important seed houses scrupulously comply with this regulation, but the small dealer does not appear to thoroughly appreciate the importance of the requirement. The method of labeling is left very largely to suit the convenience of the individual, but it must comply with the law.

ADULTERATIONS.

The commercial seeds commonly adulaterated are: Red clover, white clover, alfalfa, red top, bent and Kentucky bluegrass. In the case of alfalfa, burr clover, sweet clover, and trefoil are used. In adulterating red clover, alfalfa, sweet clover, and yellow trefoil are the favorites. Red top may have timothy mixed with it, while red top is very frequently mixed with, or substitued entirely for, the bent grasses. Kentucky bluegrass is frequently adulterated with Canada bluegrass, a much inferior grass.

SOURCE OF SAMPLES.

In the two years practically two-thirds of the samples were collected by inspectors; almost twice as many were sent in by dealers as by farmers, but in 1917-1918 the farmers increased their samples while the dealers decreased, with the result that there was only a slight difference between them. Neither, however, use the laboratory as they ought, but this is because so many people in the rural districts know nothing about the existence of laboratory, and these are the very people whom we wish to reach.

Table No. I, showing the number of samples submitted from different counties during the biennium, indicates how inadequate the inspection of seed stocks really is, and shows how impossible it is to do the work with the present resources. Thirteen counties producing farm crops to the value of $43,000,000.00 annually were not once visited by an inspector, nor was one sample of seed sent to this department for test during the two years. Ten other counties with farm crops to the value of $40,000,000.00 were hardly inspected at all; none of them furnished more than ten samples for test during the two years. It is urged that some provision be made to remedy this state of affairs.

Table II shows the importance of Washington as a seed producing state. In some cases practically all seed produced in the United States is grown in this state.

Table III is the result of a questionnaire sent out from this office to the various county agents of the state, and thanks are due to those gentlemen who courteously and in a spirit of co-operation gave us the information thus accumulated. Some of the most important seed producing counties, and those in which the industry shows great promise, failed to furnish any data. The La Conner flats in Skagit County is one of the two districts in the United States where it is possible to produce first class cabbage seeds. The writer also saw some very fine sugar beet and sludstrup mangold seed produced there, which in itself gives promise of a lucrative industry. Mr. Alexander of La Conner produced sludstrup seed at the rate of 3,700 pounds per acre, and of excellent quality.

In the eastern section of the state many farmers instead of letting the summer fallow lie idle, have been growing the legumes, beans, and peas. As that mode of farming gives promise of being extended, and in consideration of the feeding value of horse beans and peas, there seems some future for those crops in that district.

In the vicinity of Pullman and Ritzville the soil and conditions are conducive to the successful raising of high grade seed potatoes. Already in the southwest section of the state, in Clarke and Cowlitz counties, large acreages of potatoes are grown and shipped to California for seed purposes. Whatcom and Spokane counties produce large quantities of seed peas, Spokane County this year producing upward of 4,000 acres. As a result of great variety in soil, climate, and elevation, the seed possibilities in Washington are excellent, and the prospects of financial returns are alluring. For every bushel of seed raised in this state for home use or for shipment elsewhere, just so much do we arrest the importation of weak, unacclimated seed, and good, vigorous weed seed which will flourish because of the absence of natural enemies and drawbacks sustained in its former habitat. Therefore, by every means in our power, we should encourage and assist the production of home-grown seeds.

Table No. IV shows the comparison of the purity conditions as found in clovers and alfalfa in the last four years. Alfalfa has retained its purity in good shape, but during the last year red and white clover have depreciated considerably. The red clover situation this year is somewhat unusual, as, owing to the great scarcity in the west, a considerable proportion of our requirements must come from the middle western and eastern sections of the country, and we do not expect the quality will be as desirable as our local grown material. A perusal of the chart will show that in every case, with the exception of this year's red clover, a safe margin over the minimum requirement is observed.

Table No. V covers the same ground in relation to the grains and grasses as does No. IV to clovers and alfalfa.

PERCENTAGE OF WEEDS IN SAMPLES.

Table No. VI is worthy of very special consideration, as it shows to what an alarming degree some of the worst weeds in the state are increasing in the various samples tested in this laboratory. There are two ways of regarding this; either is alarming. Either the seedsmen are less careful of their offerings, or, owing to the increased home production, the farmers unknowingly are growing more and more weed seeds, each year worse than the one previous. The situation in some cases is very bad and warrants drastic measures. Under our present law it is not compulsory to state on the sample where the seed was grown, hence we have no means of checking up the source from which the seed came. This section of the law should be amended in order to make that necessary.

The case of sheep sorrel in white clover is very noticeable. Curled dock and plaintain buckhorn are prominent in nearly every sample examined. Under the noxious weeds the most remarkable increase is that of dodder and wild mustard.

WEED CONTROL.

The above facts emphasize the necessity of the state acquiring control of the weed situation, with jurisdiction to act as occasion demands in precisely the same manner as the horticultural department would regulate an outbreak of fire blight, or cause a dirty and neglected orchard to be cleaned up. It is a grave injustice to the good, careful farmer to put him at the mercy of the shiftless, careless fellow who may happen to be growing a crop of weeds in his vicinity. Time, labor, and material are too precious, especially under present conditions, to permit of such a waste. Several states already have passed laws vesting the control of weeds in the State Department of Agriculture, prominent amongst them being Michigan, Wisconsin, Minnesota, and North Dakota. This transfer has removed a very important work from the realm of local politics and placed the regulatory work under impartial administration.

INSPECTION WORK.

The work of inspection has been accomplished under great difficulty. Owing to the fact that no appropriation has been made for the maintenance of this section, all expenses incurred have been borne by the fourth division; consequently, only a very small portion of the state has been visited. The principal towns and cities have, however, been visited, and in that way a check has been kept on wholesalers' stocks and occasional prosecutions made.

Definite lack of knowledge of the various seed houses and seed dealers doing business in the state has been a serious handicap, and it is to be hoped that at the legislature shortly to convene provision will be made for the licensing of every one selling seeds in the state, and that railroads will be required to refuse for shipment or delivery all seeds not properly labeled and stamped with the dealer's license. This will enable the department to keep a check on the quality of the material sold in the state by foreign concerns. On inspection trips nearly all seedsmen have this complaint; it is well founded and worthy of consideration. Foreign dealers will sell a chain of small towns a very inferior seed which has not been inspected by the department prior to distribution by the wholesaler, and which, when once in the hands of the small retailer, is almost immune because of the lack of funds to enforce the inspection law.

The State of Washington produces annually cereals and hay to the value of more than $150,000,000.00, besides which many acres are ploughed under or fed green for fodder. Inspection of the seed for planting the enormous acreage necessary to produce this amount is urgently required if the best results are to be obtained. A glance at Table No. V or Table No. VII will show

how few samples of cereals are inspected or tested. It is essential that steps should be taken to remedy such conditions. Some cereal seed stocks recently inspected showed 2.62 per cent of wild oats present. The state law prohibits the sale of seed containing this noxious weed, yet it is the exception to find rye and oats which do not contain a very heavy trace of wild oats. The farmer who pays 6 cents per pound for wild oats gets a poor bargain.

Section 3062 (paragraph 5) is a weak section of the law and one which savors of class legislation. It is unfair to the seedsman and the good farmer. The fact that a man raised the seeds should be no excuse for him selling an inferior article and jeopardizing the fruit of another's labor.

EDUCATIONAL WORK.

One of the most pleasant phases of the work is the opportunity which exists to give farmers and seedsmen a little occasional advice, because, after all, this work must be to a large extent educational. It is impossible for one to see a person making a mistake without having a desire to help him. The farmer must be taught the value of good, clean, virile seed, also the necessity of having his seed tested for germination and purity before seeding. Washington grows more than 50,000 acres of corn annually, yet not five samples of corn are received at the laboratory each year for test, and every one knows the effect on the ultimate crop which a poor germination of seed will entail, for it may cut the crop in half.

The State of Montana annually tests some 10,000 samples, a large proportion of them sent in by the farmers. Minnesota tests approximately the same number, the majority being sent in by farmers. In two years the Washington farmers sent 118 samples to the laboratory at Olympia.

As a part of the educational work, the state seed analyst visits several of the fairs each year. The State Fair at Yakima was attended in September, 1917 and 1918, with an exhibit of seeds, grasses, weeds, etc. The Southwest Washington Fair at Chehalis in 1917 and the Western Washington Fair in Puyallup in 1917 and 1918 were also attended. It is the object of the department through the medium of these exhibits to impress upon the farmer the great necessity of sowing more useful seeds, and less useless weeds. (Weeds not only choke out the cultivated crop, but they absorb plant material and valuable moisture from the already too limited amounts available.)

It is also the aim of this section to give the seed work as wide publicity as possible through the newspapers, fairs, and similar methods. Lack of funds, however, greatly cripple the work. Some farmers in the state appreciate the importance of the seed work, but by far the majority of them have not yet been reached.

SEED IMPROVEMENT.

A bin of grain may be compared to a herd of cattle or a band of sheep. Superior individuals may be selected from each. Individual kernels of grain vary as much in ability to produce good or poor offspring as do individual animals. The heavy plump seeds are produced in the majority of cases upon the strongest and most vigorous plants, and the light shrunken seeds upon the weaker and less vigorous plants.

Improvement can only be brought about by eliminating the poorest and breeding from the strongest individuals. Hence there is just as much reason for selecting good individual seeds of grain as for selecting good individual animals. It will not cost more than 10 cents per bushel to clean and grade grain, and one bushel increase per acre will a good deal more than pay for it; if seed is properly cleaned and graded an increase of from five to ten bushels per acre may confidently be expected. The ultimate result of this work would undoubtedly be "certified seed," something both farmers and seedsmen are vitally interested in. Seedsmen claim they would willingly pay 25 per cent more for certified seed than for the ordinary run of stuff, and it certainly would be a splendid investment for the grower to obtain good, pure, acclimated seed by paying such a small premium. The seed growers of the state are endeavoring to organize themselves so that in a few years they may be producing certified seed on a commercial basis. The State of Idaho expects to appropriate $5,000.00 to be used by the seed commissioner for seed certification work alone.

SAVING SEED.

It is frequently the case that some sections of a field produce grain of better quality than do other parts. This may be due to some difference in the soil—rust or some other cause. It frequently will pay to harvest such a section by itself and use it for seed. A still better plan is to have a special seed patch and improve on it each year if possible, finding the variety that is most suitable for local conditions, everything considered, and then eliminate the least desirable types of that variety. Grain to be used for seed should be fully matured and allowed to go through the usual sweat in the stack rather than in the bin, and when threshed, should be stored in a dry place where it will not heat. When possible, grain should have a rest after being matured before it is used for seed. Recently matured grain will not germinate so well as grain two or three months old; in some cases new grain will not germinate 20 per cent, while if held for three months, it would germinate 90 per cent.

Corn to be used for seed should be selected in the field before the crop is harvested and stored in a warm, dry place to cure properly. Severe cold is frequently injurious to damp seed, but freezing will not harm seed which is thoroughly dried.

ENEMIES OF WASHINGTON FARM CROPS.

Wheat is the leading crop in the State of Washington, and with present prices, is valued at around $80,000,000.00 annually. Through smut it is estimated that 10 per cent of the crop is lost. Therefore, do not neglect to treat your seed before sowing, and use the most resistant strains suitable for your neighborhood. Marquis and Turkey Red, the former a red spring and the latter a red winter, have proven themselves most resistant in the Northwest, and both are excellent milling wheats, being used by practically all Northwest millers as the basis for their strong baker's flour. Full information regarding the treatment of seed cereals and potatoes, as well as information regarding the best varieties to be used, may be obtained from the county agents or the State College.

The Hessian Fly.

The dreaded Hessian fly made its appearance in the state this year. It was discovered in the flaxseed stage in a field of wheat near Kent. The discovery was made by the seed analyst of this department in conjunction with Mr. J. C. Eakle of the horticultural division. Steps were immediately taken, and the crop destroyed. Later in the summer the appearance of this same pest was reported at Fisher's Landing, near Vancouver, Clarke County, and Kelso, in Cowlitz County. At Vancouver the outbreak is so serious that the United States Bureau of Entomology recommends the discontinuance of wheat growing as the surest method of control.

The Hessian fly (mayetiola destructor) is much the most destructive of any of the insects attacking wheat, to which its injury is practically confined, for though it occasionally appears on barley and rye, it has never been reared on other grains or grasses. Its name was received from the fact that it first appeared on Long Island in 1779 shortly after some Hessian troops had landed there. It now appears in almost every wheat growing section of the world. Not infrequently it destroys from 25 to 50 per cent of the crop, while the average annual loss in the United States is 10 per cent of the crop.

Life History.

The adult flies are little, dark-colored gnats about one-tenth of an inch long; so minute are they that they generally escape observation. Each female lays from 100 to 150 small reddish eggs, placing them in irregular rows of from three to five or more, usually upon the upper surface of the leaves. In a few days these hatch into small reddish maggots which soon turn white, are cylindrical in shape, about twice as long as broad, and have no true head or legs. The fall brood of maggots conceal themselves between the leaf and its base. In the spring they stop at one of the lower joints and absorb the moisture and destroy the tissues. The first indications that the maggot is at work are the tendency of the plant to stool out, the absence of the central stem, and the much darker color of the foliage. Later many plants turn yellow and die.

About three or four weeks after hatching the maggots are full grown and of a greenish-white color. The skin becomes brown and shriveled, and inside is formed the pupa. This is commonly called the flaxseed stage; in this stage most of the fall brood passes the winter, the flies emerging in April or May, while the summer brood passes its flaxseed stage in the stubble during the late summer, emerging when the first wheat is planted in the fall.

Entomologists are of the opinion, however, that we only have one brood on the Pacific Coast, and our observations would tend to corroborate that opinion. The fly when found by us at the beginning of July was already in the flaxseed stage and was still in that condition in September, when the field was destroyed; this long wait was necessitated by the wheat field being surrounded by oats then in a ripening condition. The wheat was sown late in fall and grew well until early summer, when it gradually turned yellow and died, at no time becoming more than six inches in length. In order to destroy as many of the pupae as possible, the field was thoroughly rolled by a hot road roller, then burned and afterwards plowed under deeply. This work was accomplished under the supervision of Messrs. Rhodes and Eakel of the

Seattle horticultural inspection district, and thanks are due to both gentlemen for their assistance in the matter.

There are several species of small chalcis flies parasitic on the larvae and pupae, and were it not for their assistance, it would be a very difficult matter to raise wheat in several sections of the country. Rotation of crop and cultural methods are advised as means of control. Some strains of wheat are more resistant than others, the coarser-strawed—especially the red wheat—varieties generally being better able to withstand the attacks than the slow-growing, weak-strawed varieties.

The Wire Worm.

The wire worm frequently attacks wheat in all sections of the state; it is the larvae of the click bug and is very destructive to any crop which it may attack. It takes four years to reach maturity, three of which are spent in the soil. It may be controlled to some extent by rotation of crop, fall plowing, and destroying all the rubbish and old fence rows which are the haunts of the bug.

Rust.

Almost every year rust attacks wheat in the western section of the state. It may be recognized by the masses of red spores which are to be seen on the glumes and straw. In cold sections of the country the disease will not live over in this stage, but develops a resting stage on the barberry or incense cedar on which the cycle is completed, and the spores disseminated anew to infect another crop. In our mild climate on the Pacific Coast, however, the spores will live over in the uredospore stage and infect the plant direct thereby.

Seed treatment is of very little avail where this disease is concerned; cultural methods, crop rotation, and resistant strains are the main hope.

NOXIOUS WEEDS.

Wild Oats (Avena fatua, L.)

In many samples of cereals the seed of wild oats is found. It is an annual, and one of the worst weeds found in cereals, as it is very difficult to separate either by sieves or blowers. Wild oats closely resemble the cultivated varieties and possibly are the source from which our oats came. It may be distinguished by the strong black twisted awn, and the horseshoe scar at the base of the seed which is surrounded by hairs.

The seed may be sown with that of some crop, or carried by threshers, or distributed in manure which has not been well rotted. The crop matures early in July and sheds its seed which grows the following year, and may live in the soil for not to exceed twenty months.

Eradication.

Stop sowing seed grain containing wild oats. On infested land, grow early maturing crops such as fall rye for green manuring or forage. Where wild oats have matured and shattered out disc the land immediately after harvest to encourage germination. The plants thus started to grow may be destroyed by late fall plowing. A crop rotation containing a cultivated crop will greatly facilitate the eradication.

Clover and Alfalfa Dodder (Cuscuta Epithymum, Murr.)

This plant is an annual of an entirely parasitic nature. The dodder seeds germinate and soon perish unless they come in contact with a clover or alfalfa plant. Soon after contact is accomplished, the roots die. Thereafter the plant derives its nourishment from the host plant by means of haustoria, or suckers, inserted into the stem. The plant is practically leafless and spreads rapidly by means of long, twining stems which wind themselves around additional plants and soon form a dense matted surface over a considerable area. The flowers are whitish or pinkish, occurring in clusters along the stems. The plant flowers from June until frost and seed may be found from July on. The infected areas may be distinguished by the yellow coloration. The seed is small, greenish-yellow to dark brown in color, oval to spherical in shape, dull, lightly pitted, or granular.

When a clover or alfalfa patch is badly infected, the area should be cut or pulled up, allowed to dry, coal-oiled and burned. The area may be afterwards re-seeded if desired. If only in small spots, simply cutting and allowing to dry, then burning on the spot, will kill dodder if carefully done and before the dodder goes to seed.

Idaho alfalfa is very prone to contain dodder seed, and is always closely watched. In the eastern section of Washington some very fine alfalfa and clover seed may be produced, and many farmers are doing so. There is, however, a certain proportion of growers who are paying no attention to the dodder situation, and as a consequence, seedsmen have lost confidence in the offerings from the entire district. This is especially true of the clover seed produced in the Yakima Valley.

Canada Thistle (Cirsium arvense, L.)

Canada thistle is a perennial of European origin. The stems of the plant which are produced by deep running root stalks are smooth, much branched, and vary from one to three feet in height. This plant is dioecious, some plants producing only male flowers while others produce female. It is propogated by seed and root stalks. It yields seeds in July and August; the seeds are smooth, light brown, straight or slightly curved, and flattened. The only effective manner of eradication is to starve out the plant by continual clipping and preventing the manufacture of available plant food. This pest appears to be on the decrease in this state.

Wild Mustard (Brassica arvensis).

Wild mustard is well known and very common to grain growers throughout the state. It is an annual producing erect branching stems, which grow from one to three feet in height. It flowers from June to September, and seed is found in August. The seed is borne in pods from one to two inches long and is round, varying in color from reddish-brown to black. The seeds retain their vitality for many years, and a new outbreak will assuredly follow the plowing up of seeds sufficiently near to the surface to cause germination.

Eradication.

Avoid planting seed containing wild mustard. Sow to meadow for a few years where possible, or spray with iron sulphate. Planting in the fall is a very good practical method, and one that in the experience of the writer never fails to lessen the amount of charlock in the crop on ground infested by this pest.

Seed Control.

Table No. VIII shows the amount of money spent for seed control work by some of the states, also the number of employees necessary to enforce the law and give adequate service to the public. The amount expended by the other ten states having seed legislation is not definitely known, inasmuch as the work is provided for from the general fund, but it is, however, in many states very considerable and in no case appears to be less than $1,000.00 annually.

Suggestions.

The department wishes to submit the following suggestions as the basis for an amended seed law:

1. Seed exchange bureau, to be conducted by the department to locate good, clean seed, and put the men producing it in touch with seedsmen and other buyers; to publish such a list from time to time if necessary.
2. License all persons selling seed within the state. A nominal license fee and a bond to be furnished will tend to eliminate the irresponsible seed peddlers who are found in every section of the state and to protect the farmer and law-abiding seedsman.
3. Railroads to refuse all seed not properly labeled and bearing the license number of the shipper.
4. Seed department to have complete jurisdiction over the weed control of the state; may deputize the road supervisors.
5. To make an appropriation to lead in the direction of seed certification and field inspection.
6. Free testing of samples for all citizens of the state, with a reasonable limit to be established which will protect the department from being used exclusively by the larger seedsmen.
7. Section 3057R, paragraph 3, to be amended, making it necessary to have the actual purity and germination test on the label, also date of test.
8. Section 3062R, paragraph 5, to be eliminated entirely.
9. Samples sent in for test to be labeled as follows:
   - (a) Name and address of sender.
   - (b) Name of seed.
   - (c) If grown by sender; if not, from whom purchased.

For much of the information in this report I am deeply grateful to my predecessor, Miss Katherine Stone, who was for four years head of this section, and who so ably laid the foundation on which we hope to build. Her well kept records and valuable accumulation of information were of inestimable value in rendering this report.

Respectfully submitted,
ALEX GALBRAITH,
State Seed Analyst.

TABLE I.

This table shows the number of samples received from each county and the best approximate value of hay and grain products of each county we have been able to secure.

COUNTIES	Place in List	Number of Samples in Two Years	Approximate Value of Farm Crops Exclusive of Wild Grass Hay
Adams	16	8	$12,000,000
Asotin	...	0	3,000.000
Benton	13	22	2,500,000
Chelan	14	16	1,000,000
Clallam	20	4	2,000,000
Clarke	9	44	1,500,000
Columbia	25	1	4,500,000
Cowlitz	18	5	500,000
Douglas	...	0	5,000,000
Ferry	...	0	2,500,000
Franklin	22	4	3,000,000
Garfield	26	1	6,000,000
Grant	19	5	5,500,000
Grays Harbor	17	6	1,500,000
Island	21	4	...
Jefferson	...	0	...
King	2	139	5,250,000
Kitsap	...	0	...
Kittitas	15	13	3,500.000
Klickitat	24	2	3,500,000
Lewis	12	35	1,500,000
Lincoln	...	0	19,500.000
Mason	...	0	500,000
Okanogan	...	0	500,000
Pacific	...	0	150,000
Pend Oreille	...	0	450,000
Pierce	5	63	...
San Juan	...	0	...
Skagit	11	36	4,750,000
Skamania	...	0	...
Snohomish	8	52	...
Spokane	3	128	...
Stevens	...	0	1,750,000
Thurston	7	55	1,250,000
Wahkiakum	23	3	...
Walla Walla	6	62	11,500,000
Whatcom	4	75	3,750.000
Whitman	10	42	29,750,000
Yakima	1	141	15,250,000
Total	...	962	$153,350,000

TABLE II—PRODUCTION OF VEGETABLE SEED IN STATE OF WASHINGTON.

PLANT	Acres	Amount Per Acre (Pounds)	Percentage of Total National Production
Onion	30	300	...
Dwarf beans	456	300	...
Garden beans	26	350	...
Garden peas	38,467	900	33.3
Turnips, white	353	1,200	50
Turnips, Swede	227	1,200	80
Mangold, Wurtzel	101	1,350	25
Beet (garden)	121	1,135	5
Pumpkin	148	250	10
Summer squash	323	325	33.3
Spinach	1,767	1,000	50
Cabbage	514	550	75
Radish	709	750	10

TABLE III.

COUNTIES	Alfalfa	A'sikc	Barley	Beans	Cabbage	Clover (C.)	Clover (R.)	Clover (W.)	Corn	Kale	Mangolds	Oats	Peas	Red Top	Rye	Sweet Clover	Timothy	Turnips	Vetch
Clarke	......	......	......	......	......	......	......	......	100	10	......	1,000	30	......	40	......	......	......	60
Cowlitz	......	......	50	......	......	......	......	......	20	......	......	500	5	......	......	......	......	......	......
Franklin†	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Grays Harbor‡	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Jefferson§	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Kitsap	......	......	......	......	......	......	......	......	......	2	......	......	......	......	......	......	......	25	......
Klickitat	50	......	1,500	50	......	......	......	......	......	......	......	1,500	60	......	1,000	40	......	......	......
Pierce	......	......	......	25	......	......	......	......	......	20	......	265	150	......	100	......	......	......	......
Pacific	......	......	......	......	......	......	......	......	......	......	......	Very little	......	......	......	......	......	......	......
Pend Oreille	......	10	......	......	......	20	......	......	......	......	......	350	35	......	100	......	......	......	......
Spokane**	......	......	......	......	......	......	......	......	......	......	......	......	40,000	......	......	......	......	......	2,000
Thurston	......	......	300	50	......	......	......	......	10	......	......	6,000	300	......	1,000	......	......	10	25
Total acres reported	50	10	1,850	125	*	20	......	......	130	32	......	9,615	40,580	......	2,240	40	......	35	2,085

† Is a wheat county, but in the near future will have about 10,000 acres under irrigated cultivation, and then may produce some seed.

‡ Farmers not interested in this work, but agent suggests mangolds, rutabaga and spinach to be worked in conjunction with dairying.

§ Usually surplus of bluebell and kaiser field peas, but this year crop very short in everything.

** Also possibility for many other varieties of seed which might be pushed.

* Seventy-five per cent of all cabbage seed produced in United States produced in Washington, principally in Skagit county.

TABLE IV—AVERAGE OF PURITY CLOVER AND ALFALFA.

NAME OF CROP	Standard	1914-1915			1915-1916			1916-1917			1917-1918		
		Number of Samples	Percentage of Purity	Number Above Standard	Number of Samples	Percentage of Purity	Number Above Standard	Number of Samples	Percentage of Purity	Number Above Standard	Number of Samples	Percentage of Purity	Number Above Standard
Alfalfa	96	52	98.923	50	24	98.98	21	29	98.25	27	12	97.78	11
Red clover	92	75	97.96	75	21	96.5	19	20	98.02	20	29	90.9	21
Alsike	90	19	95.75	18	8	94.39	6	7	92.64	6	11	96.48	10
White clover	90	25	95.87	25	8	97.46	6	10	93.31	8	8	94.94	7
Sweet clover	90										2	99.26	2
Totals		171		168	61		52	66		61	62		51

TABLE V—AVERAGE PERCENTAGE OF PURITY OF GRAINS, GRASSES AND ROOT CROPS.

NAME OF CROPS	U. S. Seed Standard	1914-1915			1915-1916			1916-1917			1917-1918		
		Number of Samples	Percentage of Purity	Number Above Standard	Number of Samples	Percentage of Purity	Number Above Standard	Number of Samples	Percentage of Purity	Number Above Standard	Number of Samples	Percentage of Purity	Number Above Standard
Timothy	96	13	97.84	12	18	98.16	16	12	99.09	12	10	97.2	9
Cereals	98	2	97.63	1				2	90.95	0	1	99.66	1
Bluegrass	80	5	89.55	3	2	91.90	2	6	94.87	6	2	93.08	2
Red top	90	2	94.93	2				4	87.49	8			
Rye grass	95	2	94.93	1	1	98.65	1	5	94.47	4	1	97.27	1
Vetch	98	2	93.93	0	1	98.98	1				1	82.77	0
Orchard grass	70	4	83.38	4	2	92.20	2	4	95.01	4	8	89.96	8
Kale	99				2	92.99	0						
Beet											1	99.75	1
Total		30			26			33			24		
Miscellaneous		8		8	8		8	12		12			
Totals		38		31	34		30	45		41	24		22

TABLE VI—GERMINATION TESTS, 1914-1916.

KIND OF SEED	No. of Tests	Standard (U. S.)	Highest Test	Lowest Test	Average Test
Alfalfa (Medicago sativa)	73	80	97.5	54	87.6
Barley (Hordeum vulgare)	6	90	100.0	91.5	96.5
Bluegrass (Poa pratensis)	15	45	83.5	22.0	50.0
Clover, red (Trifolium pratense)	89	80	97	60.0	84.1
Clover, alsike (Trifolium hybridum)	84	75	96	77	86.22
Clover, white (Trifolium repens)	82	75	94	58	81.48
Clover, sweet (Melilotus alba)	4	75	76.5	60.5	70.0
Corn, sweet	2	75	100.0	76.5	88.25
Millet (Setaria italica)	2	85	93.5	91.5	92.5
Oats (Avena Sativa)	4	90	100	64	83.0
Orchard grass (Dactylis glomerata)	5	70	80.5	64	72.5
Kale	4	90	96.5	30	74.1
Rye grass (Lolium italicum)	2	80	93	92	92.5
Timothy (Phleum pratense)	37	85	99	58	90.2
Wheat (Triticum)	2	90	99.5	99.5	99.5
Red top (Agrosts alba)	2	70	87.5	11.5	49.5
	313				

TABLE VII—GERMINATION TESTS, 1916-1918.

KIND OF SEED	No. of Tests	Standard (U. S.)	Highest Test	Lowest Test	Average Test
Alfalfa (Medicago sativa)	47	80	98.5	57.5	84.32
Barley (Hordeum vulgare)	1	90	80.5	80.5	80.5
Bluegrass (Poa pratensis)	8	45	80	35.5	65.12
Clover, red (Trifolium pratense)	37	80	95.0	64.5	82.58
Clover, alsike (Trifolium hybridum)	12	75	98.5	72.5	82.09
Clover, white (Trifolium repens)	11	75	82.5	33.5	73.5
Clover, sweet (Melilotus alba)	3	75	78	42.5	64.8
Corn, sweet	6	96	97	82.0	89.25
Millet (Setaria italica)	1	85	89.5	89.5	89.5
Oats (Avena Sativa)	3	90	98.5	58	83.5
Orchard grass (Dactylis glomerata)	10	70	86.5	67.5	77.85
Red top (Agrostis alba)	3	70	71.5	52.0	65.0
Meadow fescue (Festuca pratensis)	1	85	81.5	81.5	81.5
Kale	10	90	99.0	64.5	93.1
Rye grass (Lolium italicum)	5	80	82.5	63.5	73.2
Timothy (Phleum pratense)	21	85	98	84	92.5
Wheat (Triticum)	16	90	99.5	73.0	94.34
	195				

TABLE VIII.

NAME OF WEED	ALFALFA		RED CLOVER		ALSIKE		WHITE CLOVER		TIMOTHY		ORCHARD GRASS		GRASS MIXTURE		CEREALS	
	1914-1916	1916-1918	1914-1916	1916-1918	1914-1916	1916-1918	1914-1916	1916-1918	1914-1916	1916-1918	1914-1916	1916-1918	1914-1916	1916-1918	1914-1916	1916-1918
Canada thistle	.76	0	6.25	6.5	0	0	0	0	6.45	7.3	0	0	0	0	0	0
Clover and alfalfa dodder	18.5	31	2.1	12.8	0	0	0	0	0	0	0	0	0	0	0	0
Corn cockle	0	0	0	0	0	0	0	0	0	0	0	8.5	0	0	0	0
Field dodder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quack grass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wild mustard	0	4.95	0	6.1	0	0	0	5.5	0	4.8	0	0	0	33.3	0	100
Wild oats	0	2.4	0	0	0	0	0	0	0	4.8	0	0	0	0	100	0
Black mustard	3.96	4.95	5.2	0	0	0	0	0	16.1	4.8	0	0	0	0	0	0
Bindweed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Curled dock	20.0	31.0	22.8	38.8	7.4	0	12.1	22.2	0	13.6	33.3	58.3	0	66.6	0	0
Plantain buckhorn	33.0	42.8	27.1	45.0	29.6	11.1	12.1	44.4	12.95	9.1	0	16.6	0	66.6	0	0
Russian thistle	4	5	7.3	7.8	0	0	0	0	0	0	0	0	0	0	0	0
Sheep sorrel	0	42	30.3	38.8	63.0	55	24.2	100	0	46.0	33.3	66.6	0	66.6	0	0
Smooth crabgrass	0	0	2.3	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE IX—SEED CONTROL—STATES WITH DEFINITE APPROPRIATIONS.

STATE	Annual Appropriation	NO. OF PERSONS EMPLOYED
Idaho	$5,000	(Inadequate; expects $7,500). Seed commissioner, analyst and assistant; also inspectors in country as funds will allow.
Kentucky	3,500	Chief, and as much assistance as funds will allow.
Maine	23,000	Chief, inspector, analyst, and necessary help. Also assist in other inspection work.
Montana	16,000	Superintendent, assistant, three other assistants, and as much additional help as possible.
Nebraska	1,800	(Salary of analyst). As much help as necessary because work is bound up in the department as a whole.
New Hampshire	500	
New Jersey	7,000	Chief, analyst, assistant, stenographer and laboratory aid.
North Dakota	6,500	(Expect more; not enough). Seed commissioner, two regular and several part-time assistants.
Oregon	1,000	Has federal analyst.
Pennsylvania	1,500	Pays salary of analyst.
Virginia	6,500	(Expects more). Chief analyst, three laboratory assistants.
Washington	1,200	Analyst.
Wisconsin	5,000	(Entirely inadequate). Chief, assistant, stenographer and laboratory aid.
Wyoming	1,200	One analyst.
Minnesota	6,500	One analyst and necessary assistants.
West Virginia	10,000	One chief analyst, assistant, two inspectors.

North Carolina and Tennessee also have sufficient funds to carry on the work, but such funds are not segregated and are also helped by licenses. The other ten states receive small funds from the funds of either the dairy and food commission or department of agriculture.

REPORT ON FOODS, FEEDS, FERTILIZERS, DRUGS, OILS, BAKERY AND RESTAURANT INSPECTIONS.

Hon. E. F. Benson,
Commissioner of Agriculture,
Olympia, Washington.

Dear Sir: In compliance with the law, I am submitting herewith the Third Biennial Report of the Fourth Division of the State Department of Agriculture, covering the period from July 1, 1916, to June 30, 1918. The work includes foods, feeds, fertilizers, drugs, oils, bakery and restaurant inspections.

The Hon. J. J. Higgins of Seattle was chief of this division from July 2, 1913, to August 3, 1917, when, after a serious illness, he departed this life. After his demise I was appointed to succeed him as chief of the division, since which time I have endeavored to administer the affairs of the division in an economical and efficient manner and in accordance with the policy of the state administration, viz., to accomplish as much work as possible with the least expense.

The activities of this division during the past biennium have been greatly increased over those of the previous period. This is due, in a great measure, to our country being at war. The Federal Government, in its desire to conserve and save for our boys and allies, has permitted (with restrictions) substitutes and by-products to be used in the manufacture of foods. Some of the manufacturers have taken advantage of this leniency and utilized mill offal, refuse and rubbish for the same purpose. Until the past year the adulteration, misbranding and fraud in the manufacture and sale of food products has been on the increase, which has multiplied our work and made us more active, watchful and vigilant.

Seattle being the largest manufacturing and distributing point of food products in the state and the state office having been permanently located here since January, 1917, has given the whole force of the fourth division opportunity to be alert and on the lookout for the large shipments of illegal and unfit food products that are distributed from here. We get them in bulk before they are sent broadcast throughout the state, thereby saving traveling, hotel and other expenses while hunting them up.

During the period covered in this report there were employed in food, feed, fertilizer, bakery and restaurant inspection work two inspectors all of the time and three part of the time, in addition to myself, and one drug inspector all of the time. The duties of the food inspectors and the drug inspector called them practically to all the large cities and towns of the state and, through the use of our Ford machine, inspections were made at many of the smaller towns and out-of-the-way places; work that could not have been accomplished, except at heavy expense, without the Ford auto.

They covered the inspection of foods and drugs at the manufacturing plants, factories, wholesale and retail food and drug establishments, as well as bakeries, restaurants, hotels, boarding houses and doctors' offices. Inspections have been made of cold storage and packing plants, slaughter and commission houses, grocery stores and meat markets, feed and flouring mills and stores, bottling works and soda fountains, drug stores, butter stores, bakeries, restaurants and all places where food and drug products are manufactured, stored or offered for sale.

The total number of inspections made by the fourth division during the biennium was 25,788, subdivided as follows: Cold storage plants, 64; packing plants, 11; manufacturing plants, 102; wholesale houses, 219; commission houses, 163; grocery stores, 5,119; meat markets, 3,516; bottling works, 53; soft drink places, 1,564; drug stores, 2,107; butter stores, 1,728; bakeries, 1,008; restaurants, 775; barber shops, 4; confectioneries, 99; creameries, 3; doctors' offices, 44; fruit and vegetable stands, 2,486; fish markets, 480; fertilizer plants, 10; feed mills, 216; feed stores, 439; general stores, 144; hotels and boarding houses, 25; hospitals and sanitariums, 50; oils, 273; public market stalls, 3,743; piers, 203; fruit stands, 493; seed stores, 32; slaughter houses, 69; miscellaneous, 304; reinspections, 186, and assistant inspections, 33.

The foregoing inspections resulted in 65,798 packages of foods and drugs, 88,432 pounds of bulk goods, 2,730 dozen of eggs and 100 miscellaneous items—consisting of 10 gallons of cream, 1 barrel bulk olives, and 89 old and insanitary cooking and baking utensils—being condemned, because of being unfit for human food, and the utensils unfit for use in preparing foods for consumption. When possible the above condemned goods were used for animal food; when not, they were utilized in the manufacture of fertilizers. The utensils were destroyed.

In comparing the inspections and destructions of this with the previous biennium you will note that during this period there were 9,184 more inspections made, 24,303 less packages, 197,825 less pounds of bulk goods, and 12,623 less dozen of eggs destroyed; which is evidence of greater activity on the part of the division and that the inspection force has at all times been on the job.

Reports of these different inspections are on file in the Seattle office.

There were also gathered and submitted for analysis to the state chemist 819 samples of foods and drugs, 124 samples of stock and poultry feeds suspected of being in violation of the pure food and drug law, and 142 samples of fertilizers for analysis. General food and drug samples have not been taken for several years past, owing to the lack of appropriation for the purpose. They should be taken at least once annually, that the department might know they are being held to the standard; besides, it would have a tendency to make the manufacturer more careful.

In addition to our regular inspection work we have conducted an educational exhibit and campaign covering a period of four weeks at four fairs.

CHANGES IN FORCE.

As state food inspector the first fourteen months and as chief of the fourth division the last ten months of this biennium, I have made 6,290 inspections, including 11 slaughter houses, which resulted in closing 1 slaughter house permanently, 3 temporarily closed, 3 notified to improve conditions, and 4 passed inspection; besides making 21 prosecutions for violations of the food laws, resulting in 21 convictions.

The present state food inspector, who succeeded me as such on September 1, 1917, in the last ten months of the biennium has made 3,568 inspections, including 40 slaughter houses, resulting in 10 being temporarily closed, 6 permanently closed, 12 notified to improve conditions, and 12 passed inspection; besides making 43 prosecutions for violation of the state food law, resulting in 1 dismissal and 42 convictions.

From the beginning of this biennium to November 1, 1917, when he severed his connection with the department, the assistant oil and food inspector at Spokane had made 1,113 oil and general food inspections, including 18 slaughter houses, resulting in 2 being permanently closed, 4 temporarily closed, 5 notified to improve conditions, and 7 passed inspection.

BAKERIES.

During this period there were 1,008 bakeries and 775 restaurants carefully inspected. These inspections covered conditions and quality of material used, cleanliness and health of employees, sanitary conditions of buildings, utensils, walls, floors, sinks, etc.

The state bakery and restaurant inspector has worked in conjunction with the food, drug, stock-feed inspectors and myself, and made, including general food, a total of 9,255 inspections of butter stores, meat and public markets, stalls and stands; besides during the biennium has made 50 prosecutions of violators of the pure food laws, resulting in 2 acquittals, 1 dismissal, and 47 convictions.

EGGS.

This state has a law classifying and regulating the labeling and marketing of eggs, which helps somewhat, but we still have complants about bad eggs. Several years ago the Federal Government claimed that 17 per cent of the egg production of the United States found its way to the dump. I understand, however, this percentage has been decreased somewhat. With careful handling and shipping I believe it can be reduced to a minimum.

A produce merchant of this city told me a few days since that he received a case of eggs from a shipper and found the whole top layer putrid. He notified the shipper, and the eggs were held subject to his order. Subsequently they were turned over to another produce house, where I found them. I had this case of eggs candled, after which two-thirds of the case were sent to the dump; the remainder were only fair cooking eggs, and were sold for that purpose. It is doubtful that the shipper received shipping charges, etc., out of the deal.

To save the egg producer this loss, to save trouble for the produce merchant, and to assure the consumer good eggs, I would suggest the egg law be amended so as to compel those handling eggs to candle them before transferring them to the next merchant, beginning with the producer, as candling is the most accurate way of detecting a faulty egg.

VINEGAR.

During this period we have had very little trouble with the enforcement of the regulations relating to vinegar, as chapter 168, Session Laws 1917, known as substitute Senate Bill 90, compels the Commissioner of Agriculture of this state, with the approval of the Agricultural Advisory Board, to adopt, publish, and enforce as the standards of this state the standards of quality, purity and strength adopted and applied by the United States Department of Agriculture in enforcement of the laws of the United States against the adulteration and misbranding of foods and drugs, except in cases where other standards are specifically prescribed by the laws of this state.

Prior to the enactment of the above law the state regulation relating to vinegar was in conflict with the federal ruling on the same matter, because the state regulations for cider vinegar called for 4½ grams acetic acid strength, while the federal ruling for cider vinegar called for 4 grams acetic acid. The difference of a half gram between the federal and state rulings caused quite a little dissatisfaction among the vinegar manufacturers of the state, when they knew they were permitted to ship vinegar interstate containing only 4 grams and for intrastate purposes they were compelled to make the product a half gram stronger. Now that the state and the federal rulings are the same there seems to be no dissatisfaction or complaint and the vinegar matter is running smoothly.

VEAL.

For several years past, since the milk condensers have been paying the higher prices to the dairy farmer for whole milk, the farmer has claimed he could only feed a calf at a loss. To prevent this loss he has therefore sold the veal calves to the so-called calf buyer, who, with his auto truck goes from one dairy farm to the other, gathering up these two and three days old calves, and, I understand, sometimes contracts for them before they are dropped at a very small price. They are taken to rural slaughter houses, barns, and sometimes in the timber, slaughtered and placed on the market for veal. This product was seized, condemned and destroyed when falling into the hands of our inspectors, but no arrests were made until chapter 168, Sessions Laws 1917, known as substitute Senate Bill 90 was passed, making it obligatory on the State Commissioner of Agriculture to adopt, publish and enforce section 21, paragraph 1 of the regulation governing meat inspection of the United States Department of Agriculture, which reads: "Carcasses of calves, pigs, kids, and lambs too immature to produce wholesome meat shall be condemned. Such carcasses shall be considered too immature to produce wholesome meat if (a) the meat has the appearance of being water-soaked, is loose, flabby, tears easily, and can be perforated with the fingers, or (b) its color is grayish red, or (c) good muscular development as a whole is lacking, especially noticeable on the upper shank of the leg," etc.

After warning the people trafficking in this unwholesome product for several years, last spring, under the above regulations, we rounded them up and since February, 1918, to the present date we have made 25 prosecutions for violation of this regulation, resulting in 1 dismissal and 24 convictions. We are now getting more wholesome veal.

SLAUGHTER HOUSES.

During the biennium there were 69 rural slaughter houses inspected, with the following results: Temporarily closed, 17; permanently closed, 9; notified to improve conditions, 20; passed inspection, 23; 17 were temporarily closed because the insanitary conditions surrounding the slaughtering made the meat product a menace to public health and they were closed until these conditions were remedied; 9 were permanently closed because the location was absolutely unfit for the purpose; 20 were given notices to improve conditions, such as batten and screen houses to exclude flies, fix drainage, clean killing bed and walls surrounding same; also to whitewash interior of house; 23 passed inspection.

Many of the rural slaughter houses have been fearfully insanitary, but through the passage of substitute Senate Bill 90 by the 1917 session of the legislature, compelling this department to adopt, publish, and enforce the rules and regulations as adopted and applied by the United States Department of Agriculture, we have been able to remedy many of the existing filthy conditions. While it is almost an impossibility to make the rural slaughter house operators comply to the letter of the United States rules and regulations, we are getting to it as nearly as possible, and the country slaughter houses are in a more sanitary condition than ever before.

COLD STORAGE.

There is urgent need of regulation of cold storage. During the biennium large quantities of food products have gone from the cold storage to the fertilizer plants because of there being no time limit for cold storage products. During August of this year we sent from a cold storage plant in Seattle approximately 5,000 pounds of fish which should have been used as a food product instead of being held until it became rusty, putrid, and only fit for fertilizing purposes. This is only one of many instances that occur during a biennium.

We have now in course of preparation a bill covering the matter of cold storage and earnestly hope for its consideration and adoption that this waste of food products may be remedied.

SANITATION.

Notwithstanding the lack of a general sanitary law has placed the inspection force of this division at a great disadvantage, through judgment and diplomacy we have accomplished a great deal of good work along sanitation lines, such as having toilets removed from rooms where food products are manufactured and stored and the cleaning up of back rooms connected with grocery stores and meat markets, where stale vegetables are frequently left to decay and the sawdust from the meat market floor is left for days until the scraps of meat mixed with it become sour and sometimes putrid. But should the inspector be called at any time he would be found with nothing to back him.

I therefore suggest the enactment of a sanitary law similar to that of the State of Iowa, the enforcement of which can be conducted by the inspectors without an increase of expense.

STOCK FEEDS.

This law having been placed under this division for enactment, I, as state food inspector, had gathered all stock and poultry feed samples and submitted them to the state chemist for analysis, until June 20, 1917, when there was an inspector appointed for this purpose; since which time, until the end of this period, there were 124 stock and poultry feed samples taken and submitted to the state chemist for analysis, resulting in 85 being legal, 27 illegal, and 12 doubtful.

Under section 6023 of the State Stock Feed Law there were 11 complaints filed for violation of the law in King, Whatcom, and Spokane counties, resulting in 3 convictions, 1 dismissal, 2 suspended judgments, and 5 cases pending.

The stock feed inspector beside the above work has made 1,179 inspections, including bakery and general foods, and has attended 9 county fairs for educational purposes on stock and poultry feeds.

FERTILIZERS.

During the biennium there were gathered and submitted to the state chemist for analysis 142 samples of fertilizers, the fees collected for the same amounting to $1,122.00.

The law authorizes the publication of the results of the analysis made. The 1917 session of the legislature failing to provide the necessary printing fund is why such publications have not been made.

The fertilizer law should be so amended as to provide a standard, or the necessary funds should be appropriated for the purpose of publishing the results of these analyses, because, prior to the war, when potash was plenty and low in price, some of the manufacturers used the word "complete" on some of their brands, and gave as their guaranteed analysis—Nitrogen, Phosphoric Acid and Potash. The past season potash was virtually off the market, and it was impossible to procure it, and still some of the manufacturers persisted in branding a fertilizer "complete" when it contained only nitrogen and phosphoric acid. If it was complete with potash it is incomplete without it, and the results of the analysis should be published as per the law, that the farmers may be advised of this and other facts.

DRUGS.

The drug inspector during this period has made 4,365 inspections, consisting of wholesale and retail drug establishments, hospitals, sanitariums, doctors' offices, bottling works and soda fountains and general food establishments. His personal report will be found with the division reports.

OIL.

The report of the chief oil inspector will be found in connection with the division reports, with his comments.

PROSECUTIONS.

One hundred and nineteen prosecutions for violation of the food and drug laws were made by this division during the biennium, which resulted in 107 convictions, 5 dismissals, 2 forfeitures of bonds, 2 suspended judgments, 2 acquittals, and 1 ordered to discontinue basement bakery, but was not fined. Besides the above, 7 cases are now pending. The fines and forfeitures aggregate $3,770.00. The above prosecutions were made in 21 counties.

INSPECTORS.

I attribute much of the success of this division to the fact that we have not been hampered by being compelled to take into the service men who are not qualified for their positions by training.

The scientific nature and commercial importance of the several lines of work pursued by us make it necessary that none but those trained in their respective lines be employed, as in any other business enterprise we could not expect men schooled in another line of work to make good. To be of service to the public the inspectors enforcing the food, feed, fertilizer, drugs, bakery, and restaurant laws must be familiar with commercial channels through which foodstuffs are marketed; must be conversant on the subject of proper methods of handling and storing foods; and must possess sufficient training in sanitary science to secure a practical application of the several laws.

As a matter of fact, it is difficult for the department to secure and retain the services of men who are competent to do the work in the various fields pursued by us. The experience gained by our inspectors qualifies them in a few years for positions at an advance in salary and the state is compelled to compete with the Federal Government, other states and cities and commercial concerns for their services.

Our salary limits have remained substantially the same as those in force eight years ago, regardless of the fact that the cost of all of the necessities of life have risen at least 100 per cent. Our people are all trained and giving efficient service. Unless the salary limits affecting the inspectors, stenographers and clerks of this division are substantially increased I feel that we will be unable to maintain the present efficient service.

DIVISION BULLETIN.

During the biennium we have issued no bulletins as required by the food and fertilizer law because of the lack of sufficient printing fund.

The detailed inspection reports are on file in the department and can be consulted by the public at any time.

Respectfully submitted,
WILL H. ADAMS,
Asst. Commissioner, in Charge Division Foods, Feeds, Etc.

REPORT OF STATE DRUG INSPECTOR.

In making a report of work done and results accomplished during the past biennium I find that many conditions of affairs have arisen which have delayed trips and in many cases made complete change of routing necessary.

Due to the present unsettled conditions, manufacturers have been compelled to change formulae, and many to discontinue the manufacture of one, and sometimes many or all, of their preparations, as the materials entering into the composition of such preparations were either produced, manufactured or grown in one of the warring countries.

This has made our work harder, and necessitated greater vigilance; as some manufacturers, not being equipped to test ingredients, would buy from those whose price was the lowest, without regard to the quality of the drug itself, resulting in a mixture the composition of which was unknown, or the results to be obtained from the uses of it greatly misstated.

On the other hand, those manufacturers who always had standardized doubled their vigilance, and the dealers who handled their preparations were able to continue the quality of their own products, though at an increased price.

Many unscrupulous persons have taken advantage of the shortage of chemicals to foist upon the trade imitations of these at prices enough below the quoted price of the true article to act as a bait to the unsuspecting purchaser. By obtaining the co-operation of the dealers, who before buying would request that these products comply with the laws and regulations, we have been able to detect and regulate such dishonest practices.

The shortage of sugar has caused considerable trouble, but the loyalty of manufacturers has come to the front with an earnest endeavor to produce substitutes requiring lesser amounts or new ones made from pure ingredients heretofore unthought of for such uses.

There had been many complaints of foreign (poisonous or harmful) ingredients having been added to candy and other foods sold at places frequented by soldiers, but most of these upon investigation (samples having been taken and submitted to the state chemist for analysis) have proved to be without foundation. But we could not relax our vigilance, and thus considerable time and money was spent to carry on these investigations which, in other less serious times would be spent in looking after quality, cleanliness and proper labeling throughout the state.

As the greater quantity of goods for our state are unloaded at coast points, and the greater congestions of people doing war work have been on Puget Sound, it has required more of our time at Seattle, Tacoma, and other coast points. But we have covered all the state at least once each year and answered each call made upon us as soon as we could complete what we had in hand and hurry to that point.

We have been hampered very greatly in the purchase of samples by the shortage of money and through the lack of help given the two state chemists, who do our work without pay, and as soon as they get an assistant broken in see him taken away by some other school which is more liberal with salaries.

We have compelled the bottlers of soft drinks to adopt standards and label their products correctly, and today they are producing most of their goods from the fruit or fruit juices themselves, instead of synthetic ethers as formerly. We have compelled greater cleanliness around soda fountains and require glasses and utensils to be washed in hot water, and when such hot water is not available, have urged the use of sanitary paper cups, etc.

We are also greatly hampered by lack of transportation facilities, and believe it to be to the best interest of the state that each inspector be supplied with an automobile, that each may finish his work in one place and hurry on to the next without waiting upon some other inspector whose work may take twice as long to do properly, or cause that person to do only a portion of his work in order to not hold up others traveling with him in the same automobile.

Respectfully submitted,
EDWARD L. JONES,
State Drug Inspector.

SUMMARY OF INSPECTIONS MADE BY THE STATE DEPARTMENT OF AGRICULTURE, DIVISION OF FOODS, FEEDS, ETC.

INSPECTIONS MADE	INSPECTORS							
	Adams........	Coffin........	Collier........	Fowler........	Gray........	Henderson.....	Jones........	Totals........
Assistant inspections	2	....	3	4	....	....	24	33
Bakeries (including notices)	8	733	6	....	106	139	16	1,008
Barber shops	....	....	....	....	....	....	4	4
Bottling works	....	....	....	....	....	....	53	53
Butter stores	403	837	8	....	33	447	....	1,728
Confectioneries	11	32	....	....	43	....	13	99
Cold storage	34	1	12	....	2	13	2	64
Commission houses	....	....	....	....	....	168	....	168
Creameries	....	....	....	....	....	8	....	8
Doctors' offices	....	....	....	....	....	....	44	44
Drug stores	....	....	....	....	....	....	2,107	2,107
Fruit and vegetable stalls	826	1,172	9	....	22	457	....	2,486
Fish markets	273	64	70	....	20	52	1	480
Fertilizer plants	2	....	7	....	....	1	....	10
Feed mills	....	....	216	....	....	....	....	216
Feed stores	3	....	424	....	....	....	12	439
General stores	....	....	5	....	....	....	139	144
Groceries	2,653	949	144	1	306	1,026	40	5,119
Hotels and boarding houses	1	23	....	....	....	....	1	25
Hospitals and sanitariums	....	4	....	....	....	....	46	50
Meat markets	1,634	514	132	....	279	950	7	3,516
Manufacturing plants	27	8	49	....	....	13	5	102
Miscellaneous	127	5	10	....	81	21	60	304
Oil	....	....	....	32	84	....	157	273
Packing plants	....	....	10	....	....	....	1	11
Public market stalls	....	3,688	19	....	4	....	32	3,743
Piers	125	....	8	....	....	70	....	203
Reinspections	....	186	....	....	....	....	....	186
Restaurants	68	647	....	....	34	16	10	775
Stands	20	372	....	....	....	101	....	493
Seed stores	....	....	32	....	....	....	....	32
Soft drink stands	....	0	....	....	....	....	1,564	1,564
Storage plants and warehouse	....	....	....	....	....	6	3	9
Wholesale drug stores	....	....	....	....	....	....	13	13
Wholesale houses	62	....	15	....	81	50	11	219
Slaughter houses	11	....	....	....	18	40	....	69
	6,290	9,235	1,179	37	1,113	3,568	4,365	25,787

BAKERY INSPECTION.

		Bakeries
Bakeries inspected—		
Graded as good	302	
Graded as fair	130	
Graded as poor	38	
Not baking	6	
	476	476
Reinspections	186	
Total inspections	662	
Notices served	177	
U. S. reports	80	
Bakeries having certificates	279	
Bakeries without certificates, as shops do not meet requirements	191	
Bakeries not baking	6	476

Number of towns visited on inspection trips........... 75

Towns visited and number inspections made—

Aberdeen	13	
Auburn	3	
Bellingham	8	
Black Diamond	2	
Blaine	1	
Bremerton	8	
Buckley	5	
Burlington	1	
Burton	1	
Camas	1	
Carbonado	1	
Carson	1	
Cashmere	1	
Centralia	3	
Chehalis	2	
Clear Lake	1	
Cle Elum	3	
Colfax	2	
Davenport	1	
Edmonds	1	
Ellensburg	4	
Elma	2	
Enumclaw	2	
Ephrata	1	
Everett	13	
Everson	1	
Fairfax	2	
Ferndale	1	
Garfield	1	
Georgetown	3	
Goldendale	1	
Harrington	1	
Hillyard	1	
Hoquiam	12	
Kapowsin	1	
Kent	1	
La Conner	1	
Leavenworth	2	
Lyle	1	
Lynden	1	
McCleary	1	
Montesano	2	
Mt. Vernon	2	
Neah Bay	1	
Oakesdale	2	
Olympia	8	
Orting	2	
Port Angeles	11	
Port Townsend	5	
Pullman	3	
Puyallup	4	
Renton	4	
Riverside	1	
Rosalia	1	
Roslyn	2	
Seattle	114	
Sedro Woolley	2	
Sequim	1	
Spangle	1	
Spokane	55	
South Bellingham	2	
Stellacoom	1	
Sumas	1	
Sumner	3	
Tacoma	98	
Tekoa	2	
Toppenish	2	
Vancouver	5	
Walla Walla	6	
Wapato	2	
Washougal	1	
Wenatchee	2	
White Salmon	1	
Wilkeson	4	
Yakima	13	476

SUMMARY OF CONDEMNATIONS MADE BY THE STATE DEPARTMENT OF AGRICULTURE, DIVISION OF FOODS, FEEDS, ETC.

FOODS.

Canned Goods.

		Cans	*Totals*
Fish—Miscellaneous	2,597		
Fish—Salmon	55,235	57,832	
Fruits		2,758	
Marshmallows		8	
Meats		274	
Milk		616	
Miscellaneous		160	
Oysters and clams		7	
Pork and beans		1	
Soups		34	
Vegetables		1,004	62,694

Bottled Goods.

		Bottles
Capers	72	
Catsup	2	
Chili	3	
Dressing	73	
Extracts	332	
Fountain fruits	11	
Horseradish	38	
Jams and jellies	33	
Miscellaneous	210	
Nectar	1	
Olives	281	
Pickles	869	
Pimento	8	
Peanut butter	4	
Relish	18	
Sauces (Worcestershire, etc.)	63	2,018

Package Goods.

		Packages
Baking powder	58	
Cereal products	112	
Cheese	386	
Fruit—dried	78	
Spices	188	
Vegetables—dried	13	835

Bulk Goods.

		Pounds
Cereals	70	
Fish	60,986	
Flour	341	
Fruits	4,623½	
Meats	5,016½	
Nuts	273	
Poultry	1,772	
Vegetables	15,350	88,432

Eggs.

		Dozen
Eggs	2,730	2,730

Miscellaneous.

Olives	*Bbls.*	1	
Cream	*Gals.*	10	
Utensils—cooking and baking	*Pcs.*	89	100

Drugs.

	Packages	
Blood remedies	4	
Catarrh cures	14	
Children and worm remedies	7	
Cold and grippe cures	19	
Colic cures	75	
Corn remedies	2	
Cough cures	8	
Fever remedies	16	
Fluid extracts	6	
Kidney and liver remedies	7	
Laxatives	14	
Miscellaneous	40	
Salves and ointments	1	
Syrups	7	
Pharmaceuticals	16	
Rheumatic remedies	14	250
		157,060 parcels

Summary.

Canned goods	62,694
Bottled goods	2,019
Package goods	835
Bulk goods	88,432
Eggs	2,730
Miscellaneous	100
	156,810
Drugs	250
Total condemnations	157,060 parcels

SUMMARY OF PROSECUTIONS MADE BY THE STATE DEPARTMENT OF AGRICULTURE, DIVISION OF FOODS, FEEDS, ETC.

Benton County.

No. 145—State of Washington v. J. P. Connolly. Charge: Selling decomposed salmon, Fined $75 and costs.

Chelan County.

No. 290—State of Washington v. Jim Sing. Charge: Refilling Lea & Perrin's bottles. Fined $25 and costs.

No. 291—State of Washington v. Brocking & Mosher. Charge: Refilling Lea & Perrin's bottles. Fined $25 and costs.

No. ....—State of Washington v. Frank Yama. Charge: Refilling Lea & Perrin's bottles. Fined $25 and costs.

No. ....—State of Washington v. S. Ness. Charge: Possession of filthy flour. Fined $25 and costs.

Clallam County.

No. 237—State of Washington v. Farmers' Market. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

No. 238—State of Washington v. G. Ellinger. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

No. 239—State of Washington v. Cook & Johnson. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

Clarke County.

No. 2249—State of Washington v. I. Sutherland. Charge: Possession filthy flour. Fined $25 and costs.

No. 2589—State of Washington v. Fullenweider & Son. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

No. 2590—State of Washington v. Fullenweider & Son. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

No. 2588—State of Washington v. W. Carmichael. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

No. 2587—State of Washington v. A. Collins. Charge: Selling sub-standard canned milk. Fined $25 and costs.

Cowlitz County.

No. ....—State of Washington v. C. A. Paully. Charge: Adulterating Hamburger with Freez-em. Fined $20 and costs.

Grays Harbor County.

No. 347—State of Washington v. Renderich & Rabooesch. Charge: Refilling Lea & Perrin's bottles. Fined $25 and costs.

No. 349—State of Washington v. C. Julius. Charge: Refilling Lea & Perrin's bottles. Fined $25 and costs.

No. 354—State of Washington v. Jim Marzous. Charge: Possession of filthy flour. Fined $25 and costs.

No. 353—State of Washington v. N. M. Randish. Charge: Refilling Lea & Perrin's bottles. Fined $25 and costs.

King County.

No. ....—State of Washington v. Seattle & Puget Sound Packing Company. Charge: Selling decomposed salmon. Fined $100 and costs.

No. ....—State of Washington v. Monroe Lewis, president, S. & P. S. P. Co. Charge: Selling decomposed salmon. Fined $100 and costs.

No. ....—State of Washington v. Sigmund Lewis, vice-president, S. & P. S. P. Co. Charge: Selling decomposed salmon. Fined $50 and costs.

No. ....—State of Washington v. J. P. Connolly, traveling salesman, S. & P. S. P. Co. Charge: Selling decomposed salmon. Fined $50 and costs.

No. 6978—State of Washington v. John Fischer. Charge: Selling immature, unwholesome veal. Fined $50 and costs.

No. 6557—State of Washington v. Tony Pappas. Charge: Operating basement bakery. Ordered to discontinue.

No. 6896—State of Washington v. Sand L. Brown. Charge: Possession tainted and immature veal. Fined $50 and costs.

No. 6979—State of Washington v. A. Otts. Charge: Possession immature and unwholesome veal. Fined $40 and costs.

No. 7142—State of Washington v. C. H. Bruce. Charge: Selling immature veal. Fined $40 and costs.

No. ....—State of Washington v. S. L. Brown. Charge: Selling immature veal. Fined $100 and costs.

No. 7344—State of Washington v. Ed Nishio. Charge: Possession filthy flour. Fined $25 and costs.

No. 7343—State of Washington v. C. Osawa. Charge: Possession filthy flour. Fined $25 and costs.

No. 7342—State of Washington v. Anthos Grigoris. Charge: Refilling Lea & Perrin's bottles. Forfeited bond, $5.

No. 7343—State of Washington v. Anthos Grigoris. Charge: Refilling Lea & Perrin's bottles. Forfeited bond, $5.

No. ....—State of Washington v. C. C. Frederickson. Charge: Selling immature veal. Fined $25 and costs.

No. ....—State of Washington v. Frank Umchlimski. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

No. 7573—State of Washington v. Peter J. Hessler. Charge: Selling immature veal. Fined $50 and costs.

No. 7101—State of Washington v. Lehmann Brothers. Charge: Adulterating stock feeds. Dismissed.

No. 7719—State of Washington v. George Pheffer. Charge: Selling immature veal. Fined $25 and costs.

Lewis County.

No. 272—State of Washington v. I. A. Muzzleworth. Charge: Refilling Lea & Perrin's bottles. Fined $25 and costs.

Lincoln County.

No. 233—State of Washington v. Odessa Meat Co. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

No. ....—State of Washington v. F. J. Field. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

Jefferson County.

No. 147—State of Washington v. F. L. Terry. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

Pierce County.

No. 5349—State of Washington v. G. Ononyo. Charge: Possession of filthy flour. Fined $25 and costs.

No. 5348—State of Washington v. T. Tayuchi. Charge: Possession of filthy flour. Fined $25 and costs.

No. 5395—State of Washington v. E. G. Havel. Charge: Refilling Lea & Perrin's sauce bottles. Fined $25 and costs.

No. 5394—State of Washington v. I. Oino. Charge: Refilling Lea & Perrin's sauce bottles. Acquitted.

No. 11546—State of Washington v. E. A. Fedderson. Charge: Selling Oleomargarine without exhibiting sign. Fined $25 and costs.

No. 11547—State of Washington v. Beck Bros. Charge: Maintaining filthy restaurant. Fined $50 and costs.

No. 11548—State of Washington v. William Nicholas. Charge: Selling wormy walnuts. Fined $25 and costs.

No. 11549—State of Washington v. R. Wakimoto. Charge: Possession of filthy bread. Fined $25 and costs.

No. 11550—State of Washington v. G. Nouys. Charge: Possession of filthy oatmeal. Fined $25 and costs.

No. 11552—State of Washington v. Fred Sneeberger. Charge: Selling Oleomargarine without exhibiting sign. Acquitted.

No. 11557—State of Washington v. Tony Bazich. Charge: Refilling Lea & Perrin's bottles. Fined $25 and costs.

No. 11951—State of Washington v. Fred Sneeberger. Charge: Using Oleomargarine without displaying sign. Dismissed.

No. ....—State of Washington v. B. C. Rosser. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

Skagit County.

No. 222—State of Washington v. C. C. Woolen. Charge: Possession of veal unfit for food. Fined $25 and costs.

No. 223—State of Washington v. Arnid Olsen. Charge: Offering for sale veal unfit for food. Fined $25 and costs.

No. 224—State of Washington v. Mert McKee. Charge: Offering for sale veal unfit for food. Fined $25 and costs.

No. 225—State of Washington v. Mert McKee. Charge: Offering for sale veal unfit for food. Dismissed.

No. 226—State of Washington v. B. S. Reiki. Charge: Offering for sale veal unfit for food. Fined $25 and costs.

No. 227—State of Washington v. R. W. Isbill. Charge: Selling veal unfit for food. Fined $25 and costs.

No. 228—State of Washington v. W. E. White. Charge: Offering for sale veal unfit for food. Fined $25 and costs.

No. 229—State of Washington v. Joe Cann. Charge: Offering for sale veal unfit for food. Fined $25 and costs.

No. 237—State of Washington v. L. M. Morgan. Charge: Offering for sale veal unfit for food. Fined $25 and costs.

No. 238—State of Washington v. J. O'Brien. Charge: Offering for sale veal unfit for food. Fined $25 and costs.

No. 239—State of Washington v. P. C. Dybbro. Charge: Offering for sale veal unfit for food. Fined $25 and costs.

No. 230—State of Washington v. B. H. Crisp. Charge: Offering for sale veal unfit for food. Fined $25 and costs.

No. 231—State of Washington v. E. L. Stevens. Charge: Offering for sale veal unfit for food. Dismissed.

Snohomish County.

No. 2907—State of Washington v. Seattle & Puget Sound Packing Company. Charge: Selling decomposed and putrid canned salmon. Fined $100 and costs.

No. 2908—State of Washington v. Sigmund Lewis, vice-president, S. & P. S. P. Co. Charge: Selling decomposed and putrid canned salmon. Fined $500 and costs.

No. 2928—State of Washington v. J. Rygg. Charge: Offering for sale veal unfit for food. Fined $25 and costs.

No. 2929—State of Washington y. Isaac Rygg. Charge: Offering for sale veal unfit for food. Fined $25 and costs.

No. 2984—State of Washington v. I. A. Rygg. Charge: Adulterating Hamburger with Freez-em. Fined $40 and costs.

No. 2979—State of Washington v. M. L. Brown. Charge: Selling immature veal. Fined $25 and costs.

Spokane County.

No. ....—State of Washington v. W. S. Gilfre. Charge: Selling adulterated sausage. Fined $25 and costs.

No. 6211—State of Washington v. S. Lewis (King County). Charge: Selling decomposed salmon—Spokane County. Fined $50 and costs.

No. 6212—State of Washington v. J. P. Connolly of King County. Charge: Selling decomposed salmon—Spokane County. Fined $50 and costs.

No. 6213—State of Washington v. J. P. Connolly of King County. Charge: Selling decomposed salmon—Spokane County. Fined $50 and costs.

No. 1999—State of Washington v. Muzzy & Van Hersett. Charge: Possession filthy flour. Fined $10 and costs.

No. 2001—State of Washington v. E. G. McWilliams. Charge: Possession filthy flour. Fined $10 and costs.

No. 2002—State of Washington v. Sam Petre. Charge: Possession filthy flour. Fined $25 and costs.

No. 2003—State of Washington v. B. Brunell. Charge: Possession filthy flour. Fined $10 and costs.

No. 2010—State of Washington v. Spokane Seed Company. Charge: Adulteration poultry feed. Dismissed with costs.

No. 2011—State of Washington v. Spokane Seed Company. Charge: Adulteration poultry feed. Fined $25 and costs.

No. 2012—State of Washington v. Inland Seed Company. Charge: Adulteration Poultry feed. Fined $25 and costs.

No. 2013—State of Washington v. J. W. Walsh. Charge: Refilling Lea & Perrin's bottles. Fined $25 and costs.

No. 2000—State of Washington v. Spokane Hotel Company. Charge: Possession filthy flour. Fined $10 and costs.

Stevens County.

No. ....—State of Washington v. John Furst. Charge: Selling diseased carcass of beef. Fined $25 and costs.

No. ....—State of Washington v. Arnold & Todd. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

Thurston County.

No. ....—State of Washington v. Wm. Kost. Charge: Possession filthy flour. Fined $25 and costs.

No. 526—State of Washington v. Bolster & Barnes. Charge: Possession filthy flour. Fined $25 and costs.

No. 524—State of Washington v. M. Koff. Charge: Possession of filthy flour. Fined $25 and costs.

No. 525—State of Washington v. Louis Dorrnecker. Charge: Possession filthy flour. Fined $25 and costs.

Walla Walla County.

No. 1765—State of Washington v. Lee Gee. Charge: Refilling Lea & Perrin's bottles. Fined $25 and costs.

No. 1773—State of Washington v. Chas. Tung. Charge: Filth in restaurant. Fined $25 and costs.

No. 1776—State of Washington v. B. Y. Cain. Charge: Refilling Lea & Perrin's bottles. Fined $25 and costs.

No. 1779—State of Washington v. John Bechtold. Charge: Possession filthy flour. Fined $25 and costs.

No. 1782—State of Washington v. J. E. Hawkins. Charge: Possession filthy flour. Fined $25 and costs.

No. 1785—State of Washington v. Walla Walla Meat Co. Charge: Adulterating Hamburger with Freez-em. Fined $30 and costs.

Whatcom County.

No. ....—State of Washington v. A. Stunurman. Charge: Offering for sale veal unfit for food. Fined $25 and costs.

No. 432—State of Washington v. Arthur Bishop. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

No. 431—State of Washington v. Hans Overleitner. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

No. 462—State of Washington v. Henry Ford. Charge: Misbranding stock feeds. Judgment suspended.

No. 463—State of Washington v. F. J. Farley. Charge: Misbranding stock feeds. Judgment suspended.

Whitman County.

No. ....—State of Washington v. Henry Behnvens. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

No. ....—State of Washington v. M. Overly. Charge: Adulterating Hamburger with Freez-em. Fined $25 and costs.

No. ....—State of Washington v. M. D. Overby. Charge: Adulterating sausage with sulphite. Fined $25 and costs.

No. 13157—State of Washington v. J. P. Connolly. Charge: Selling putrid canned salmon. Fined $50 and costs.

No. 13158—State of Washington v. J. P. Connolly. Charge: Selling putrid canned salmon. Fined $50 and costs.

No. 13159—State of Washington v. J. P. Connolly. Charge: Selling putrid canned salmon. Fined $25 and costs.

No. 13160—State of Washington v. J. P. Connolly. Charge: Selling putrid canned salmon. Fined $25 and costs.

Yakima County.

No. 961—State of Washington v. Richelieu Cafe. Charge: Refilling Lea & Perrin's sauce bottles. Fined $25 and costs.

No. 962—State of Washington v. John Keehtel. Charge: Refilling Lea & Perrin's sauce bottles. Fined $25 and costs.

No. 963—State of Washington v. Red Apple Cafe. Charge: Refilling Lea & Perrin's sauce bottles. Fined $25 and costs.

Kittitas County.

No. 170—State of Washington v. G. A. Masuda. Charge: Refilling Lea & Perrin's sauce bottles. Fined $25 and costs.

No. 24—State of Washington v. F. Bugin. Charge: Possession filthy flour. Fined $25 and costs.

No. 145—State of Washington v. Mr. Batassa. Charge: Possession filthy flour. Fined $25 and costs.

No. 144—State of Washington v. John Price. Charge: Possession filthy flour. Fined $25 and costs.

No. 143—State of Washington v. John Schoder. Charge: Possession filthy flour. Fined $25 and costs.

No. 25—State of Washington v. John Bordesous. Charge: Possession filthy flour. Fined $25 and costs.

Total fines—$3,770.

Summary by Counties:

Benton County	1	$75 00	
Chelan County	4	100 00	
Clallam County	3	75 00	
Clarke County	5	125 00	
Cowlitz County	1	20 00	
Grays Harbor County	4	100 00	
Kittitas County	6	150 00	
King County	19	765 00	
Lewis County	1	25 00	
Lincoln County	2	50 00	
Jefferson County	1	25 00	
Pierce County	13	275 00	
Skagit County	13	275 00	
Snohomish County	6	715 00	
Spokane County	13	315 00	
Stevens County	2	50 00	
Thurston County	4	100 00	
Walla Walla	6	155 00	
Whatcom County	5	75 00	
Whitman County	7	225 00	
Yakima	3	75 00	$3,770 00
	119		

Number of prosecutions made		119
Number cases dismissed	5	
Number cases acquitted	2	
Number cases forfeited bond	2	
Number cases judgment suspended	2	
Number cases ordered to discontinue basement bakery, no fine	1	
Number cases fined	107	119

FOOD SAMPLES ANALYZED.

KIND	Legal	Illegal	Doubtful	Totals
Cocoa	1	2	1	4
Confectionery	9	..	..	9
Corn (canned)	4	19	..	23
Beans (canned)	..	..	3	3
Eggs (canned)	..	10	..	10
Eggs (fresh)	..	48	..	48
Extracts (flavoring)	17	39	1	57
Filth (bins, sinks, kitchens)	..	5	..	5
Fish (except salmon)	8	3	2	13
Flour	2	31	..	33
Fruits	6	1	..	7
Jams and jellies	45	1	..	46
Jelly powders	8	..	..	8
Lard	2	..	..	2
Meat	13	36	4	53
Milk (condensed)	32	8	..	40
Miscellaneous	15	5	4	24
Peanut butter	4	..	..	4
Preserves	6	..	..	6
Poultry	2	5	..	7
Salmon	58	182	1	241
Soft drinks	25	20	23	68
Sugar	3	..	..	3
Vinegar	10	9	2	21
Totals—				
Food	270	424	41	735
Drugs	65	17	..	82
	345	441	41	817

DRUG SAMPLES ANALYZED.

	Legal	Illegal	Totals		Legal	Illegal	Totals
Alcoholic liquor	..	1	1	Tincture Iodine	8	3	11
Antikamnia tablets	3	..	3	Powdered licorice	..	1	1
Aspirin	1	..	1	Lotions	..	2	2
Barium sulphate	1	..	1	Lung balsam	1	..	1
B. K.	1	..	1	Mineral (Talcum)	1	..	1
Bronchial troches	1	..	1	Olive oil	2	..	2
Brown mixture	..	1	1	Prescriptions	2	..	2
Spirits camphor	5	1	6	Preservatives	3	..	3
Camphorated oil	2	..	2	Peroxide hydrogen	2	..	2
Capsicum (powdered)	1	..	1	Powders	3	..	3
Citric acid	1	..	1	Quinine	1	..	1
Cold and grippe remedies	6	..	6	Salts	1	..	1
Color	..	1	1	Saltpeter	1	..	1
Copenhagen snuff	1	..	1	Syrup	1	..	1
Corn remedies	2	..	2	Tablets	2	..	2
Formaldehyde	..	1	1	Turpentine	2	..	2
Jamaica ginger	1	..	1	Water	1	..	1
Glycerine	3	..	3	Whiskey	..	1	1
Headache remedy	3	..	3	Oil of wintergreen	1	..	1
Hair tonic	1	5	6				
	33	10	43		32	7	39
				Totals	65	17	82

STOCK FEED SAMPLES ANALYZED.

	Legal	;al	Doubtfu	Totals
Alfalfa feeds	2			2
Barley feeds	9			9
Beet pulp	1			1
Bran	6		1	7
Dairy feed and chop	7	5	3	15
Hog feed		1		1
Horse feed		1		1
Middlings	2	2	1	5
Oat feeds	9		1	10
Shorts	8		1	9
FEED MEALS				
Alfalfa meal	1			1
Cornmeal	3	1		4
Cottonseed meal			2	2
Linseed meal	3			3
Pig meal	1	1		2
Rye meal	3			3
Rye flour		2		2
Soy bean meal	3			3
Totals	58	13	9	80

POULTRY FEED SAMPLES ANALYZED.

	Legal	Illegal	Doubtful	Totals
Scratch	14	2	1	17
Corn feeds	2			2
Oats (ground)	1			1
Egg foods	3	2	2	7
Mashes	4	7		11
Meat scrap and meal	2	2		4
Fish meal		1		1
Bone meal	1			1
Totals	27	14	3	44

Stock feeds		80
Poultry feeds		44
Total feeds		124
Legal	85	
Illegal	27	
Doubtful	12	124

ANALYTICAL FEES FOR FERTILIZERS COLLECTED.

Aabling Boyce Seed Co., Seattle, Wash	$30 00
American Minerals Producing Co., Tacoma, Wash	36 00
American Pacific Whaling Co., Bay City, Wash	18 00
Armour & Co., Spokane, Wash	30 00
Balfour Guthrie Co. (for U. S. Whaling Co.)	24 00
S. Blachley, Spokane, Wash	24 00
Carstens Packing Co., Spokane, Wash	18 00
Carstens Packing Co., Tacoma, Wash	36 00
James Henry, Seattle, Wash	24 00
Jacob Kaufman, Seattle, Wash	18 00
Chas. H. Lilly Co., Seattle, Wash	186 00
Nitrate Agencies Co., Seattle, Wash	6 00
Nitro-Phosphate Fertilizer Co., Tacoma, Wash	48 00
Pacific Guano and Fertilizer Co	18 00
Portland Seed Co., Portland, Ore	144 00
Randall & McLoughlin, Seattle, Wash	18 00
Robinson Fisheries Co., Anacortes, Wash	24 00
Sea Products Co., Everett, Wash	24 00
Union Meat Co	132 00
Union Meat Co., North Portland, Ore	186 00
Walla Walla Meat and Cold Storage Co., Walla Walla, Wash	60 00
Western Fertilizer Co., San Francisco, Cal	18 00
	$1,122 00

FERTILIZER SAMPLES TAKEN.

	Legal	Illegal	Doubtful	Totals
Nitrate of soda	7	4	....	11
Potash	8	5	....	13
Phosphate	12	3	....	15
Fertilizers (general)	11	22	3	36
Bone, meat, blood meals	26	12	....	38
Tankage	9	7	....	16
Guano	9	4	....	13
Totals	82	57	3	142

SUMMARY OF TOWNS INSPECTED, BY COUNTIES.

COUNTIES	INSPECTORS					
	Adams	Coffin	Collier	Gray	Henderson	Jones
Adams					Lind	Lind
Benton			Prosser			
Benton			Kiona			
Benton			Kennewick			
Benton			Richland			
Chelan		Cashmere			Peshastin	Peshastin
Chelan		Leavenworth			Leavenworth	Leavenworth
Chelan		Malaga			Cashmere	
Chelan		Wenatchee	Wenatchee		Wenatchee	Cashmere
Chelan					Monitor	Wenatchee
Chelan					Entiat	Monitor
Chelan					Lakeside	Lakeside
Chelan					Chelan	Chelan
Clallam		Neah Bay			Port Angeles	Sequim
Clallam		Port Angeles			Sequim	Port Angeles
Clallam		Sequim				
Clarke		Camas			Amboy	Camas
Clarke		Ridgefield			Brush Prairie	LaGrande
Clarke		Vancouver				Vancouver
Clarke		Cumberland			Crawford	Washougal
Clarke		Washougal			Ellsworth	Felida
Clarke					Etna	
Clarke					Felida	
Clarke					Helson	
Clarke					LaCenter	
Clarke					LaGrande	
Clarke					Orchards	
Clarke					Ridgefield	
Clarke					Vancouver	
Clarke					Washougal	
Columbia		Dayton				
Cowlitz		Woodland			Yacolt	Kelso
Cowlitz					Castlerock	Kalama
Cowlitz					Kelso	Castlerock
Cowlitz					Kalama	
Cowlitz					Olequa	
Cowlitz					Ostrander	
Cowlitz					Woodland	
Douglas		Columbia River	Waterville		Waterville	Waterville
Douglas			Douglas		Douglas	Douglas
Douglas			Withrow		Bridgeport	Bridgeport
Douglas			Bridgeport		Pateros	Pateros
Douglas			Orondo		Orondo	Orondo
Douglas					Farmer	Farmer
Douglas					Mansfield	Mansfield
Ferry			Republic		Orient	Republic
Ferry			Malo		Boyd	Malo
Ferry			Curlew		Marcus	Curlew
Ferry			Danville		Laurier	Danville
Ferry			Laurier		Ferry	Orient
Ferry			Orient			Ferry
Ferry			Boyd			Boyd
Ferry			Ferry			
Franklin	Pasco		Pasco		Pasco	Pasco
Franklin						Connell
Garfield	Pomeroy					
Grant		Ephrata			Coulee City	Ephrata
Grant		Quincy				Coulee City

SUMMARY OF TOWNS INSPECTED, BY COUNTIES.—Continued.

COUNTIES	INSPECTORS					
	Adams	Coffin	Collier	Gray	Henderson	Jones
Grant		Trinidad			Soap Lake	Soap Lake
Grant		Soap Lake			Adrian	Adrian
Grant					Wilson Creek	Wilson Creek
Grant						Hartline
Grays Harbor		Aberdeen	Aberdeen		Aberdeen	Aberdeen
Grays Harbor		Elma	Elma		Elma	Elma
Grays Harbor		Montesano	Montesano		Montesano	Montesano
Grays Harbor		Westport	Westport		Westport	Westport
Grays Harbor		Ocosta	Ocosta		Ocosta	Ocosta
Grays Harbor		Bay City	Bay City		Bay City	Bay City
Grays Harbor			Hoquiam		Hoquiam	Hoquiam
Grays Harbor					Cosmopolis	
Grays Harbor					Malone	
Grays Harbor					Oakville	
Grays Harbor					Porter	
Grays Harbor					Satsop	
Jefferson		Chimacum				
Jefferson		Pt. Townsend				
Jefferson		Quilcene				
King	Seattle	Auburn	Barneston		Seattle	Seattle
King		Enumclaw	Bryn Mawr		Bryn Mawr	Kent
King	Kent	Burton	Seattle		Renton	Auburn
King	Auburn	Burlington	Selleck		Enumclaw	O'Brien
King	Enumclaw	Barneston	Kent		Bayne	Kirkland
King	Des Moines	Kent	Enumclaw		Black Diamond	North Bend
King	Redondo	Renton	Auburn			
King	Zenith	Seattle			Duval	Selleck
King		Selleck			Falls City	Barneston
King		Black Diamond			Issaquah	Enumclaw
King		Bayne			Novelty	
King		Kanasket			North Bend	
King					Selleck	
King					Snoqualmie	
King					Tolt	
Kittitas	Ellensburg	Ellensburg	Thorp		Cle Elum	Roslyn
Kittitas	Cle Elum	Roslyn			Roslyn	Cle Elum
Kittitas		Cle Elum			Ellensburg	Ellensburg
Kitsap		Bremerton				Bremerton
Klickitat	Sunnydale	Bingen				Lyle
Klickitat		Lyle				Goldendale
Klickitat		White Salmon				White Salmon
Klickitat		Goldendale				
Lewis	Adna	Centralia	Centralia		Adna	Adna
Lewis	Chehalis	Lindberg	Chehalis		Chehalis	Chehalis
Lewis	Dryad	Mineral			Curtis	Curtis
Lewis	Doty	Morton			Dryad	Dryad
Lewis	Littell				Doty	Doty
Lewis	McCormick				Evaline	Klaber
Lewis	Pe Ell				Littell	Littell
Lewis					Napavine	Morton
Lewis					Pe Ell	Mineral
Lewis					Toledo	McCormick
Lewis					Vader	Lindberg
Lewis					Walville	Pe Ell
Lewis					Winlock	Walville
Lincoln	Davenport	Davenport		Davenport	Davenport	Davenport
Lincoln		Harrington		Odessa	Odessa	Harrington
Lincoln					Harrington	Bluestem
Lincoln					Creston	Odessa

SUMMARY OF TOWNS INSPECTED, BY COUNTIES.—Continued.

COUNTIES	INSPECTORS					
	Adams	Coffin	Collier	Gray	Henderson	Jones
Lincoln					Wilbur	Lamona
Lincoln					Govan	Edwall
Lincoln					Almira	Irby
Lincoln					Irby	Almira
Lincoln					Lamona	Waukon
Lincoln					Bluestem	
Lincoln					Waukon	
Mason			Shelton			
Okanogan			Brewster		Brewster	Brewster
Okanogan			Methow		Methow	Riverside
Okanogan			Twisp		Riverside	Twisp
Okanogan			Winthrop		Winthrop	Winthrop
Okanogan			Malott		Malott	Methow
Okanogan			Okanogan		Okanogan	Okanogan
Okanogan			Omak		Omak	Omak
Okanogan			Riverside		Carlton	Grand Forks
Okanogan			Conconully		Conconully	Conconully
Okanogan			Tonasket		Tonasket	Oroville
Okanogan			Oroville		Oroville	Molson
Okanogan			Molson		Molson	Chesaw
Okanogan			Chesaw		Chesaw	Carlton
Pacific	Raymond				Francis	Long Beach
Pacific	Long Beach				Globe	Holcomb
Pacific	Holcomb				Lebam	Lebam
Pacific	Lebam				Menlo	Menlo
Pacific	Menlo				South Bend	Willapa
Pacific	Willapa				Willapa	Ilwaco
Pacific	Ilwaco				Long Beach	Chinook
Pacific	Chinook				Seaview	Seaview
Pacific	Seaview				Ilwaco	South Bend
Pacific	South Bend				Chinook	
Pierce	Tacoma	Buckley	Lakeview		Sylvan	Tacoma
Pierce	Hillhurst	Orting	Tacoma		Tacoma	Alder
Pierce	McKenna	Tacoma	Sumner		Alder	Ashford
Pierce	Roy	Puyallup	Steilacoom		Alderton	Alderton
Pierce	Raymond	Alder	Puyallup		Burnett	Burnett
Pierce	Puyallup	Ashford	Gig Harbor		Buckley	Eatonville
Pierce		Carbonado			Carbonado	Elbe
Pierce		Elbe			Eatonville	Hillhurst
Pierce		Kapowsin			Elbe	Kapowsin
Pierce		National			Hillhurst	Loveland
Pierce		Wilkeson			Kapowsin	McMillan
Pierce					Loveland	McKenna
Pierce					McKenna	Roy
Pierce					McMillan	Orting
Pierce					Orting	Raymond
Pierce					Raymond	Spanaway
Pierce					Parkland	South Prairie
Pierce					Roy	
Pierce					Spanaway	
Pierce					South Prairie	
Pierce					Wilkeson	
Skagit	Sedro Woolley	Clear Lake	Anacortes		Mt. Vernon	Anacortes
Skagit	Burlington	Mt. Vernon	Sedro Woolley		Avon	Mt. Vernon
Skagit	Anacortes	Sedro Woolley	Mt. Vernon			Clear Lake
Skagit			Burlington			Conway
Skagit						Burlington
Skagit						Sedro Woolley
Skamania		Stevenson				Stevenson
Skamania		Carson				

SUMMARY OF TOWNS INSPECTED, BY COUNTIES.—Continued.

COUNTIES	INSPECTORS					
	Adams	Coffin	Collier	Gray	Henderson	Jones
Snohomish	Everett	Everett	Everett		Everett	Everett
Snohomish	Snohomish	Edmonds	Snohomish		Snohomish	Snohomish
Snohomish			Arlington		Arlington	Arlington
Snohomish			Marysville		Stanwood	Stanwood
Snohomish					Silvana	Silvana
Snohomish					Monroe	Lake Stevens
Snohomish						Hartford
Snohomish						Lowell
Snohomish						Marysville
Snohomish						Florence
Spokane	Spokane	Spokane	Spokane	Spokane	Spokane	Spokane
Spokane	Deer Park			Hillyard	Springdale	Deer Park
Spokane	Dartford			Deer Park	Valleyford	Mead
Spokane	Dennison			Valleyford	Freeman	Colbert
Spokane				Freeman	Rockford	Granite
Spokane				Rockford	Fairfield	Chatteroy
Spokane				Fairfield	Waverly	Opportunity
Spokane				Waverly	Latah	Otis
Spokane				Latah	Espanola	Vera
Spokane						Hillyard
Spokane						Dartford
Spokane						Dennison
Stevens	Colville		Marcus	Chewelah	Colville	Gifford
Stevens	Gifford		Northport	Colville	Addy	Kettle Falls
Stevens	Kettle Falls		Meyer Falls		Clayton	Clayton
Stevens	Loon Lake		Colville		Northport	Springdale
Stevens	Grays		Addy		Cedonia	Chewelah
Stevens	Arden		Chewelah			Loon Lake
Stevens	Hunters		Springdale			Grays
Stevens	Fruitland		Clayton			Arden
Stevens						Colville
Stevens						Fruitland
Stevens						Hunters
Stevens						Valley
Stevens						Cedonia
Thurston	Olympia	Olympia	Olympia	Olympia	Olympia	Olympia
Thurston	Rainier	Tenino			Bucoda	Rainier
Thurston	Yelm	Bucoda			Gate	Tenino
Thurston	Lacey				Grandmound	Yelm
Thurston					Lacey	
Thurston					Rainier	
Thurston					Tenino	
Thurston					Yelm	
Walla Walla	Walla Walla	Walla Walla	Walla Walla	Walla Walla		
Whatcom	Bellingham	Bellingham	Bellingham		Bellingham	Bellingham
Whatcom	Ferndale	Blaine			Sumas	Anacortes
Whatcom	Lynden	Lynden			Nooksack	Alger
Whatcom	Sumas	Sumas			Wahe	Conway
Whatcom		Everson			Lynden	Edson
Whatcom					Everson	Nooksack
Whatcom					Ferndale	Lynden
Whatcom						Blaine
Whatcom						Sumas
Whatcom						Ferndale
Whatcom						Everson
Whitman	Colfax	Colfax	Colfax	Colfax	Colfax	Pullman
Whitman	Palouse	Garfield	Tekoa		Tekoa	
Whitman	Dixie	Oakesdale	Oakesdale		Oakesdale	
Whitman	Waitsburg	Pullman	Garfield		Palouse	
Whitman	Pullman	Tekoa	Thornton		Thornton	
Whitman			Palouse		Steptoe	
Whitman			Steptoe		Garfield	

SUMMARY OF TOWNS INSPECTED, BY COUNTIES.—Concluded.

COUNTIES	INSPECTORS					
	Adams	Coffin	Collier	Gray	Henderson	Jones
Yakima	Yakima	Yakima	Yakima		Parker	Selah
Yakima	Selah	Toppenish			Selah	Parker
Yakima	Parker	Wapato			Yakima	Buena
Yakima					Sunnyside	Yakima
Yakima					Granger	Granger
Yakima					Outlook	Sunnyside
Yakima					Buena	Toppenish
Yakima					Toppenish	Wapato
Yakima					Wapato	Donald
Yakima					Donald	Naches

Many of the towns in this list were visited several times by the respective inspectors and a number of inspections made on each visit.

SUMMARY OF WORK ACCOMPLISHED BY THE FOURTH DIVISION OF THE STATE DEPARTMENT OF AGRICULTURE, JULY, AUGUST, SEPTEMBER AND OCTOBER, 1918.

Inspections: Including foods, feeds, fertilizers, drugs and bakery inspections				3,347
Oil	Gallonage	6,106,517		
	Fees	$12,213 86		
Condemnations—				
Canned goods	Cans			10,868
Bottled goods	Bottles			270
Bulk goods	Pounds			118,073
Package goods	Packages			50½
Eggs	Dozen			19½
Drugs	Packages			9
Miscellaneous	Parcels			56
Total condemnations food and drugs				128,846 parcels
Towns visited				141
Samples taken				55
Prosecutions—				
Cases filed			41	
Guilty		35		
Forfeited bond		6	41	41
Total of fines			$2,410 00	

DIVISION OF OIL INSPECTIONS.

I am pleased to hand you herewith a complete tabulated statement of oil inspections for our third biennial report, dating from July 1, 1916, to June 30, 1918.

I do not know that it is necessary to preface this report with any particular introduction. The inspections have been carefully looked after and conscientiously made by each and every one engaged therein. We have had but few complaints relative to the quality of products inspected, and have had no litigation for violations of the law.

We have constantly and persistently looked into and after the matter of branding all products sent out. Each and every company has been supplied with sufficient stencils for said work. This portion of our work is of the greatest importance for the reason that under our law each and every vendor is required to sell his product at the gravity given by the state oil inspector.

We have a minimum standard for kerosene oil. We have no standard of gravity for gasoline, etc. This, however, should be corrected, and I trust we will be able to present a bill satisfactory to the legislature relative to these matters.

Attached you will find tabulated statement of all oils inspected by us for which we have received the usual legal inspection fees as fixed by the state.

We are also handing you herewith tabulated statement of the Standard Oil Company, covering the amount of gallonage inspected together with the fees thereof, for which no collections have been made.

In May, 1916, the Standard Oil Company brought suit against the State of Washington in the matter of collecting the inspection fees. This case was tried before Judge Wright in the Superior Court of Thurston County, who found for the Standard Oil Company. The case was then appealed to the Supreme Court of the state; was heard on the 14th day of February, 1917, and Judge Wright's decision reversed and the court ordered to dismiss suit. However, the Standard Oil Company, not being satisfied, appealed this case to the U. S. Supreme Court about February 23, 1917. The Standard Oil Company gave supersedeas bond for $50,000.00. After the settlement of the case in the Superior Court the Standard Oil Company ceased to make any payments even to the registrar of the court. The matter has been pending since that time with no payments of any kind whatsoever. The case in the Supreme Court is now set for hearing on January 15, 1919.

Respectfully submitted,

S. P. WILSON,

State Oil Inspector.

SUMMARY OF OIL INSPECTIONS AND FEES.

DATE	Kerosene	Gasoline	Distillate	Naptha	Totals	Fees
1916—						
July	5,500	1,122,645	394,728	....	1,522,873	$3,047 04
August	5,380	769,062	356,621	....	1,131,063	2,262 12
September	69,308	721,194	277,660	....	1,068,162	2,136 32
October	112,218	647,302	355,207	....	1,114,727	2,229 46
November	214,223	825,362	231,327	....	1,270,912	2,541 81
December	144,289	581,669	156,461	....	882,419	1,764 84
1917—						
January	130,047	577,532	207,123	Benzine	914,702	1,831 75
February	69,170	461,439	132,547	....	663,156	1,327 81
March	45,160	571,191	319,880	....	936,231	1,873 86
April	5,400	590,640	388,601	....	984,641	1,969 28
May	200,167	844,698	369,547	1,150	1,415,562	2,832 73
June	3,705	828,423	216,452	2,200	948,094*	1,896 19
July	4,520	1,133,988	222,415	150	1,264,965*	2,531 85
August	13,093	929,412	268,414	2,450	1,161,803*	2,327 55
September	73,209	942,555	218,300	950	1,190,589*	2,381 61
October	129,090	1,010,600	137,442	150	1,277,282	2,555 59
November	165,049	974,661	461,443	....	1,601,153	3,202 30
December	275,232	749,779	160,778	100	1,185,889	2,378 58
1918—						
January	40,231	603,345	200	150	643,776	1,289 67
February	220,692	951,986	271,179	....	1,444,007	2,888 02
March	....	529,309	131,520	....	660,829	1,321 64
April	17,184	1,152,542	94,189	....	1,263,915	2,531 89
May	82,377	1,179,644	275,743	....	1,537,764	3,075 52
June	120,686	1,006,847	194,400	....	1,321,993	2,645 74
	2,145,930	19,705,825	5,837,237	7,300	27,401,567	$54,827 67

	Gals.		Gals.
* Sold out of the state.			
June....................................	107,686	Kerosene..............................	2,145,930
July....................................	96,108	Gasoline..............................	19,705,825
August..................................	51,506	Distillate............................	5,837,237
September...............................	39,425	Benzine...............................	7,300
	294,725		27,696,392
Less amount shipped out of the state........		....	294,725
			27,401,567

REPORT OF OIL INSPECTIONS COVERING THE STANDARD OIL COMPANY PRODUCTS, JULY 1, 1916, TO JUNE 30, 1918, ON WHICH FEES HAVE NOT BEEN PAID.

DATE	Kerosene	*Gasoline	Distillate	Naptha	Totals	Fees
Seattle						
1916—						
July	20,503	1,647,760	...	...	1,668,263	$3,336 53
August	175,743	2,000,569	...	...	2,176,312	4,352 63
September	10,311	2,741,364	...	...	2,751,675	5,503 35
October	16,799	2,231,325	...	...	2,248,124	4,496 25
November	430,953	3,718,077	...	...	4,149,030	8,298 06
December	1,616,397	2,490,547	...	...	4,106,944	8,213 89
Total	2,270,706	14,829,642	...	...	17,100,348	$34,200 71
1917—						
January	555,386	3,426,163	...	...	3,981,549	$7,963 10
February	442,394	852,800	...	...	1,295,194	2,590 39
March	121,833	1,934,092	...	...	2,055,925	4,111 85
April	903,204	2,087,622	...	...	2,990,826	5,981 65
May	231,775	1,790,417	...	...	2,022,192	4,044 38
June	111,019	2,880,865	...	...	2,991,884	5,983 77
July	232,170	1,980,414	1,954,421	...	4,167,005	8,334 01
August	226,701	2,569,680	593,260	...	3,389,641	6,779 28
September	...	1,280,809	1,145,684	...	2,426,493	4,852 99
October	237,423	2,122,845	1,145,179	227,366	3,732,813	7,465 63
November	765,898	3,005,378	452,705	...	4,223,981	8,447 96
December	706,383	2,207,395	731,793	...	3,645,571	7,291 14
Total	4,534,186	26,188,480	6,023,042	227,366	36,923,074	$73,846 15
1918—						
January	367,214	1,394,567	529,635	...	2,291,416	$4,582 83
February	369,552	1,421,392	...	...	1,790,944	3,581 89
March	1,354,517	7,229,458	2,030,159	...	10,614,134	21,228 27
April	362,523	2,051,312	369,239	...	2,783,074	5,566 15
May	52,686	1,468,034	755,216	...	2,275,936	4,551 87
June	622,985	2,526,625	735,129	...	3,884,739	7,769 48
Total	3,129,477	16,091,888	4,419,878	...	23,640,243	$47,280 48
Grand total—Seattle	9,934,369	57,059,510	10,442,420	227,366	77,663,655	$155,327 34

DATE	Kerosene	*Gasoline	Distillate	Naptha	Totals	Fees
Tacoma						
1916—						
August	58,357	350,833	97,935	...	507,125	$1,014 25
September	...	...	...	...	...	...
October	6,481	199,870	...	...	206,351	412 70
November	179,199	379,043	93,699	...	651,941	1,303 88
December	...	361,553	...	...	361,553	723 11
Total	244,037	1,291,299	191,634	...	1,726,970	$3,453 94
1917—						
January	10,289	253,394	...	...	263,683	$527 37
March	353,020	232,333	123,080	...	708,433	1,416 87
April	...	196,789	96,340	...	293,129	586 26
May	...	600,000	...	...	600,000	1,200 00
June	121,189	642,591	131,277	...	895,057	1,790 01
July	...	970,489	123,190	...	1,093,679	2,187 36
August	...	681,806	...	...	681,806	1,363 61
September	...	327,777	144,648	...	472,425	944 85
October	...	...	...	...	...	...
November	...	656,733	...	...	656,733	1,313 47
December	...	558,897	149,564	...	708,461	1,416 92
Total	484,498	5,120,809	768,099	...	6,373,406	$12,746 72
Grand total—Tacoma	728,535	6,412,108	959,733	...	8,100,376	$16,200 66

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* Includes distillate also for first twelve months recorded.

REPORT OF INSPECTIONS OF STANDARD OIL COMPANY.—Concluded.

DATE	Kerosene	Gasoline	Distillate	Naptha	Totals	Fees
Portland						
1916—						
June	10,902	91,131	16,377	2,803	121,213	$242 42
July	19,676	75,522	36,925	20	132,143	264 28
August	18,401	100,008	55,078	5,150	178,637	357 27
September	35,689	41,187	41,221	8,769	121,816	253 63
October	40,297	38,621	6,899	2,994	88,811	177 62
November	50,900	19,830	6,882	1,922	79,534	159 07
December	38,229	34,452	14,187	300	87,168	174 34
1917—						
January	74,475	16,654	11,156	10	102,295	204 59
February	43,342	13,380	25,723	....	82,445	164 89
March	27,675	11,232	7,963	....	46,870	93 74
April	26,997	26,749	47,516	1,270	102,532	205 06
May	9,412	50.856	18,145	2,043	80,456	160 91
June	19,030	206,946	46,944	1,862	274,782	549 56
July	18,437	271,671	57,124	3,935	351,167	702 33
August	54,587	218,544	103,896	3,002	380,029	760 05
September	33,206	220,125	56,411	2,823	312,565	624 73
October	60,553	259,152	72,457	2,526	394,688	789 38
November	46,933	203,936	8,232	769	259,870	519 74
December	62,579	168,589	62,067	54	293,289	586 57
1918—						
January	74,752	168,454	27,147	70	270,423	540 85
February	32,003	94,399	27,423	....	153,825	307 65
March	40,523	161,346	27,166	....	239,035	478 07
April	38,093	254,322	75,996	....	368,411	736 82
May	40,276	305,173	57,566	....	403,015	806 03
June	26,868	290,631	77,790	....	395,289	790 58
Totals	943,835	3,342,860	998,291	35,122	5,320,108	$10,640 18

SUMMARY.

	Kerosene	Gasoline	Distillate	Naptha	Totals	Fees
Seattle	9,934,369	57,059,510	10,442,420	227,366	77,663,655	$155,327 34
Tacoma	728,535	6,412,108	959,733	....	8,100,376	16,200 66
Portland	943,835	3,342,860	998,291	35,122	5,320,108	10,640 18
Totals	11,606,739	66,814,478	12,400,444	262,488	91,084,139	$182,168 18

WASHINGTON STATE FAIR.

The biennium closing October 31, 1918, marks a wonderful growth in the Washington State Fair; the two fairs held during this period having, from the point of improvements, exhibits, attractions and paid admissions, far exceeded any of the past. More interest in every way is being manifest as the fair grows and the attendance becomes more statewide, until now it cannot be truthfully said that the fair is an institution that only attracts the local people. It now compares favorably in every way with any similar institutions held in the Pacific Northwest, and in some particulars excels. While the 1917 fair exceeded any former exhibitions held upon the grounds, the 1918 fair was even larger—every department, except that of livestock, being better filled. The lack of competent help in fitting and caring for the stock, together with excessive price of feed, prevented a number of exhibitors of the Pacific Northwest, as well as some of those living in a more remote section, who were accustomed to make the fair circuit each year, from showing, and in many cases the herds have been dispersed. This being one of the results of war we may expect to see our livestock exhibits grow less each year until such a time as conditions will have become normal.

Appropriations amounting to $58,000.00 were made for the benefit of the State Fair by the 1917 legislature as follows: Salaries and wages, $9,120.00; operation and maintenance, $28,880.00; construction new grandstand, $20,000.00. The grandstand was constructed in time for use of the 1917 fair, at a cost of $20,591.38; the additional cost in excess of the appropriation being paid from the State Fair Fund arising from the proceeds of the 1917 fair. This building was much needed and is one of the factors that served to contribute to the success of the 1917 and 1918 fairs. It has a seating capacity of approximately 4,000. Most of the old grandstand was torn down and the serviceable lumber used in the construction of the new building. One section of the old building, the newer part, however, was moved to the north of its former location and made into a bleachers with a capacity of 1,000. Notwithstanding the increased capacity provided, these buildings proved inadequate on several occasions, and an addition to the grandstand should be constructed, which could be done at a comparatively small figure.

The receipts and disbursements for the biennium are as follows:

RECEIPTS.

Ballance 1915 appropriation	$2,417 35	
Balance 1916 state fair	1,041 12	
Appropriation 1917	58,000 00	
Cash receipts 1917 (state fair fund)	32,139 24	
Cash receipts 1918 (state fair fund)	35,510 14	$129,107 85

DISBURSEMENTS.

From 1915 appropriation	$2,417 35	
From 1918 appropriation	56,046 15	
From state fair fund	55,683 99	104,147 49
Balance available		$14,960,36

This balance is credited to the several funds as follows:

Operation and maintenance	$53 85
Salaries and wages	1,900 00
State fair	13,006 51
	$14,960 36

Exclusive of the grandstand, there was expended during the biennium for permanent improvements at the fair grounds $17,801.74, made up of the following items: Extra work on grandstand, $591.38; fencing, $416.00; engineering for irrigation system, $201.00; irrigation system, $1,571.63; extending water system, $425.23; camp grounds (clearing, grading and leveling), $105.00; new toilets and cesspools, $305.00; woman's building (new roof and repairs), $744.45; electric wiring in buildings and on grounds, $1,274.05; drinking fountains, $42.00; moving restaurants, paddock and bleachers, $370.00; tearing down old grandstand, $328.75; repairing stock barns, $150.00; clearing ground for auditorium, $60.00; cement steps to horticultural building, $66.60; building auditorium, $11,105.64.

There was also expended during the same period for equipment $2,612.34, as follows: Opera chairs and moving picture outfit, $750.00; service car (Chevrolet), $675.00; street sprinkler, $627.00; gasoline engine, $106.00; gasoline stoves and equipment for children's demonstrations, $133.90; range and plumbing children's restaurant, $65.44; ticket machine, $255.00.

Six hundred eighty-five dollars fifteen cents ($685.15) was expended for paint, lumber, hardware, plumbing supplies and small equipment. Thus making a total of $21,099.23 which was expended directly for the betterment and equipment of the plant.

The new auditorium, which was built at a cost of $11,105.64, is a frame building 62 feet by 100 feet, with a stage 18 feet by 40 feet, having a seating capacity of 1,200. It is completely wired and equipped for the operation of a moving picture machine and contains a complete apparatus for projecting pictures. This building fills a long felt want, and during the 1918 State Fair a continuous program consisting of lectures, educational films and demonstrations emphasizing the work of the different departments was held during each day. Each evening during the week the United States Naval Training Band from the training station at Seattle rendered concerts, which were thoroughly enjoyed by the people who filled the building to overflowing.

Twelve hundred feet of 12-inch and 675 feet of 6-inch terra cotta pipe was laid for the purpose of putting the trunk line of the irrigation system under ground, thereby greatly conserving the water. The city water system was extended by laying 568 feet of 4-inch main south to the stock barns and installing a hydrant opposite same. The system supplying the various buildings was changed by connecting same with the new pipe, giving an ample supply of water to the toilets, which, together with the seven new permanent cesspools that were also constructed, makes the grounds and buildings most sanitary. This is an improvement that was badly needed. New drinking fountains were also installed upon the grounds.

Three thousand five (3,005) feet of wood and wire fencing was built during the current year. Of this amount 405 feet was built of new material; while the remainder was reconstruction. With the exception of a small portion of fencing which will receive attention before the next fair, the grounds are now enclosed in good shape. New wire gates were also installed at the entrances.

Preliminary steps have been taken whereby the land may be made more productive, and thereby add to the fair's resources. As stated above, the irrigation water from one of the systems is now conveyed to the grounds in an underground trunk line of 12-inch terra cotta pipe, the supplying of which, in connection with the water supplied by another irrigation company, is now ample to irrigate all of the grounds. The planting of the center field and camp grounds to some kind of a hay crop is contemplated, and a survey preparatory to supplying water to these, as well as other parts of the grounds, has already been made.

Lack of space forbids a detailed statement of the work accomplished in the several departments. However, the Children's Industrial Department should receive more than passing notice, for in this department rests to a great extent the future of the fair. The children who exhibit today will be the adult exhibitors of tomorrow, and the progress of the fair, educationally, will be governed largely by the encouragement given them in exhibiting along the lines of horticultural, agricultural, livestock, and textile pursuits. Having this thought in mind, the management is lending every encouragement possible, in keeping with the resources at hand, with the result that the interest has become so statewide that 95 children, together with their chaperons, representing 26 counties, a goodly part of them bringing their exhibits, and all of them demonstrating in the projects in which they excelled, were entertained for three days during the fair. Two large tents with cots were provided for sleeping accommodations, and the meals were served in a community dining hall under the supervision of Miss Della L. Prell, director of home economics, Washington State College. The dining room, under Miss Prell's management, was conducted to perfection. Meals were not only furnished the children, chaperons and officers directly in charge of this department, but also the fifty naval training band boys were given two meals a day for the six days of the fair. In all 1,800 meals were furnished during the week, at an expense of a fraction less than 26 cents per meal, and the fact that there was no adverse criticism is satisfactory proof that they were ample. Entertainment in the way of lectures, demonstrations, moving pictures of educational subjects, and games were provided. Mrs. Elizabeth Diets Jones, state club leader, and Miss Josephine Arnquist, assistant state club leader, ably supervised the camp, and to them and their assistants is due its success.

Notwithstanding the rapid strides the fair has made during the past few years, there is much yet to be done, especially in the way of providing suitable exhibit buildings. The poultry building is old and entirely inadequate for the purpose. The woman's building is sorely taxed, while the children's department has to be housed in a portion of the dilapidated machinery building. A new building should be provided which would take care of these two departments. The old machinery building should be demolished and a new dairy and dairy machinery building erected in its place. Until such a time as a suitable building is provided we cannot hope to have a satisfactory exhibit of dairy products—one of the greatest industries of the state. The dairy department now occupies a makeshift of a building, without any refrigeration, so wholly lacking in facilities for the purpose for which it is used and so uninviting that instead of what would otherwise be one of the largest departments from an exhibition standpoint is now the least. Premiums should also be increased and new classes added. This is particularly so in the livestock department, as well as dairy, agricultural and horticultural departments. Lack of appropriation prohibits offerings for breeds of livestock which should receive recognition of full classification in the premium list. A separate offering for poultry, as well as pet stock, should also be added in the children's industrial department.

Let us hope that the 1919 legislature will make ample appropriation for continuing the work of upbuilding the fair, so nicely begun, to the end that the various departments may be strengthened by additional premium offerings and necessary buildings erected for the accommodation of exhibits which will surely follow.

Respectfully submitted,
FRANK MEREDITH,
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Fourth Biennial Report

OF THE

Washington [illegible]

Department of Agriculture

TO THE

GOVERNOR

July 1, 1918, to June 30, 1920

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Department of Agriculture

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LETTER OF TRANSMITTAL.

STATE OF WASHINGTON,
DEPARTMENT OF AGRICULTURE.

Olympia, November 1, 1920.

To His Excellency, Louis F. Hart, Governor.

Sir: I have the honor to submit herewith for your consideration the Biennial Report of the Department of Agriculture, covering the period from July 1, 1918, to June 30, 1920.

Respectfully,
F. H. GLOYD,
Commissioner of Agriculture.

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During the same period the State of Washington received $5,872.22 from the sale of skins of predatory animals that were destroyed. This means a net investment of $10,357.04 in the work of destroying animals that stockmen tell us will kill livestock annually worth $100,000.00.

There was a total of 1,476 animals destroyed:

Coyotes	1,359
Bobcats	29
Badgers	62
Skunks	18
Weazel	2
Lynx	1
Bear	3
Coons	1
Housecat	1
Total	1,476

I earnestly hope for at least an amount equal to that appropriated by the last legislature to provide for continuing the work during the next two years.

We have received from Mr. Stanley G. Jewett, Predatory Animal Inspector, a full report of the activities of the hunters during this campaign and it will be found printed herewith. It is worthy of careful consideration.

Horticultural Division.

The Division of Horticulture has been doing uniformly good work throughout the state, but we are unable to make the claim that the services rendered are entirely satisfactory. It is not because of inefficiency, but rather for the reason that the demands for inspection and certification have grown by leaps and bounds and the present working force of the division is inadequate to properly serve the territory allotted to each inspector.

The state is now divided into ten horticultural districts, each of which is in charge of an inspector. The Commissioner of Agriculture, in his report of the last biennium, stated that the service was believed to be generally satisfactory and efficient, and although prior to 1915 the state was divided into fifteen horticultural districts, we have continued during the last biennium with ten divisions, but these divisions embrace the entire state.

The chief of the division of horticulture mentions in his report the multitude of calls that are made for services of his inspectors and that by reason of the small number necessitating a large territory for each, some portions of the state are unavoidably neglected. It is recommended that the state be divided into fourteen districts and that a suitable appropriation be made to cover salary and expense of four additional inspectors. If this relief is not granted many localities in the state that need careful supervision must continue to suffer because the inspector of his district will be unable to make inspection tours as often as would be necessary.

POTATOES.

Attention is directed to that part of the report of the chief of the division of horticulture referring to potato inspection, both as regards the potatoes grown in this state and those coming from other states. For several years we have been sending our inspector from Seattle to California in order that he might inspect potatoes that would be shipped into this state before leaving California. This precaution was taken to prevent tuber moth from getting a foothold in our state, and the good work must be continued.

Growers of potatoes in this state are now demanding that our inspectors inspect and certify to the grades of potatoes at the point of shipment. This is a great potato producing state and it will require a large number of inspectors if all the potatoes shipped to market are to be inspected and certificates issued therefor.

It is especially necessary that the potatoes designed for use as seed potatoes should be inspected and graded so that it is certain they are not diseased.

The advantages to both producer and consumer will be apparent at once for the producer knows that when he ships potatoes that have been inspected they will be received by the consumer without deduction and the consumer knows when he purchases on certificate issued by the state that he will get the quality of potatoes he is buying.

SEED DIVISION.

Acting on the suggestion of the Commissioner of Agriculture in his last report, the 1919 legislature transferred the seed analyst from the Department of Agriculture to the State College at Pullman, but made an appropriation for seed inspector whose duties would be to take samples of seed stock as had heretofore been begun by the seed analyst of the department and send those samples to Pullman for analysis. Prior to this biennium it had been the custom for the seed analyst located in this office to make periodical trips throughout the state, calling on the principal wholesale and retail dealers and taking samples which would be sent in to the office and tested by the seed analyst after returning from the trip. The change from Olympia to Pullman has not been entirely satisfactory to the seed dealers because of the length of time necessarily involved in transporting the seed from the west side of the mountains to Pullman and receiving the report thereon. We are hopeful, however, that a plant of cooperation will be agreed upon by which the work may be facilitated and a satisfactory service maintained.

The 1919 legislature passed a seed certification law which authorized the seed inspector to inspect growing crops for seed purposes, and when on final inspection it was determined that the seed was up to standard, to issue a certificate as to purity of variety. The demand for this character of inspection and certification is growing and we trust that suitable provision will be made by the legislature to continue the work, for Washington has become a great seed growing state. This year it ranks third in commercial vegetable seed acreage; Idaho is first, California second. In 1918 Washington was first. In 1919 California was first and Washington second.

FOURTH DIVISION.

Foods, Feeds, Fertilizers, Drugs and Oils.

This division is charged with the inspection of the things that touch our home life. Every citizen in the state is affected by the observance or lack of observance of our pure food laws. Sometimes complaints are made that the inspectors are too officious, and when it is explained to them that we are only asking that the laws be obeyed, they condemn the law under which they are penalized; but,

"No man e'er felt the halter draw
Who had a good opinion of the law,"

and if this division of the department is lax in its duties the time would be but short when all kinds of adulterated foods would be offered for sale by unscrupulous dealers. Sometimes innocent offenders are inconvenienced, but it is not the purpose of the department to prosecute any who are not wilful offenders. These people must be made to realize that the laws have been passed to be obeyed.

The report of Mr. Will H. Adams, chief of this division, is worthy of careful scrutiny. It shows in detail the activities of the inspectors under his direction. He has but four inspectors with which to cover the entire state, but his report shows that due diligence has been exercised by all of these inspectors.

The stock feed law that was passed by the 1919 legislature has now been favorably passed upon by the Supreme Court, and the dealers and feeders generally are satisfied with the operation of the law.

We need an oil inspection law, a law on sanitation and a cold storage law, all of which, under our present system, would be administered by this division of the Department of Agriculture. We trust that these laws will be provided by the next legislature.

STATE FAIR.

I am constrained to copy again the statement which appeared in the Third Biennial Report taken from the report of the Kansas State Board of Agriculture:

"The fair stands as a unique educational force in agriculture, teaching by object lessons, and, as a whole, it makes people think. A community in which a good fair is located will produce more at less expense; the same is true of the State Fair."

The 1920 state fair has been pronounced by critics to have been a better fair than any that preceded it. All exhibits were greater than in their corresponding classes during previous years. There was a very much larger attendance than during former years and the receipts from admissions at the gate, grand-stand and from concessions, etc., were approximately $18,000 more than last year, and the year of 1919 had made the best record up to that time. The educational features of the fair were well in advance of any that had been prepared in years gone by, and the entertainment features exceeded by far anything ever before staged before the grand-stand.

Along with a meritorious state fair, however, goes hand in hand an increase of expenditures and when the books were balanced we find a deficit of approximately $10,000. This is not a loss to the state for the reason that approximately $25,000 has been spent during the last year for permanent improvements on the fair grounds, all of which were sorely needed. The 1919 legislature made no appropriation for improvements of this character and I trust that inasmuch as the state will have a permanent improvement of this value there will be no hesitancy in making a deficiency appropriation sufficient to retire all outstanding obligations.

In addition to the deficiency appropriation an emergency appropriation is needed with which to pay the salary of the secretary and manager of the fair for services rendered prior to April 1st, 1921, when the regular appropriation of the next legislature becomes available. It is estimated that $750.00 will be sufficient for this purpose.

Attention is respectfully directed to the report of Mr. G. C. Finley, Secretary-Manager of the State Fair during the last year, for full information regarding the improvements that are needed to put the state fair in the rank with similar fairs of other states.

ALFALFA WEEVIL.

In the last biennial report, the Commissioner called attention to the necessity for authority of this Department to restrict, regulate or quarantine against introduction into this state of alfalfa grown in districts where the alfalfa weevil is prevalent. Responding to the suggestion, Chapter 126 of the Session Laws of 1919 was enacted, which act was intended to confer the needed authority. A further amendment to this act is required to make the law effective. No penalty is provided by the law, if it is violated. I trust this oversight will be promptly rectified when the legislature convenes; for the infested area is spreading at the rate of about ten miles each year, and Washington should be kept free from this pest if possible.

GRASSHOPPERS AND COULEE CRICKETS.

Grasshoppers and Coulee Crickets were the source of much anxiety two years ago, and vigorous campaigns have been waged to bring about their destruction. Three thousand dollars were appropriated to defray the expense of the campaign. $1481.73 was expended during the summer of 1919, and only $220.25 in 1920. There remains unexpended $1,298.02 of this appropriation. The present indications are that the trouble is over, at least temporarily. Any appropriation made for this purpose will be in the nature of insurance, but we believe it is well to have such insurance. These pests can do untold damage in a remarkably short period of time, when unchecked.

LEGISLATION RECOMMENDED.

Dairy and Livestock Division.

1. Compulsory tuberculin testing of cattle sold publicly or privately.
2. Amend the Dairy Code. The last legislature passed an entirely new Dairy Code. It is a splendid foundation, but needs some amendments which will explain ambiguities and correct contradictions.

Horticultural Division.

1. A law providing for inspection of agricultural and horticultural products at point of shipment and authorizing the issuance of certificates that will be recognized in all courts in the State of Washington as competent evidence.
2. Give county commissioners discretionary power to fix compensation of local horticultural inspectors. The present law fixes $4.00 a day as the maximum. Competent inspectors cannot be secured at that wage when similar work in private hands is worth $6.00 to $7.50 per day.
3. Make potato inspection and potato grading compulsory.

Division of Foods, Feeds, Fertilizers, Drugs and Oils.

1. Oil Inspection Law.
2. Law on Sanitation.
3. Cold Storage Law.

Respectfully,
F. H. GLOYD,
Commissioner of Agriculture.

Honorable Louis F. Hart,
Governor of the State of Washington,
Olympia, Washington.

Sir: The period to be covered by this biennial report is that from July 1, 1918, to June 30, 1920.

During this period, the undersigned, E. F. Benson, was commissioner of agriculture, until April 1, 1920, when a six-months' leave of absence was granted by your Excellency, to enable me to visit the Oriental countries, Australia and New Zealand for the purpose of agricultural, industrial, and land settlement investigation, all expenses of the trip being borne by myself. Beginning April 1, 1920, I was succeeded by Mr. F. H. Gloyd, who had been secretary and auditor of the department since June, 1917. Having changed my plans, on returning to this country in the middle of September, I did not again take up the work of the department, as contemplated when leaving. While the report covers the biennium fixed by law only to June 30, 1920, it is deemed advisable to extend the same to November 1, 1920, in order to include the report of the state fair and such incidental information supplemental to the present fixed biennium as is deemed of interest to yourself and the forthcoming session of the legislature. Mr. Gloyd, therefore, submits the report covering the last three months of this biennium, and also covering the activities of the state fair for the year 1920.

It would seem to be more consistent if the regular biennial report should be fixed by law to end November 1st, instead of June 30th, for obviously one of the principal reasons is to have the latest and most up-to-date information for each legislative session, and I fail to see any very good reason why the report should terminate in mid-summer, six months before the legislative session.

Since Mr. Gloyd was commissioner of agriculture, at the close of the biennium, direction of this department having been given him April 1, 1920, I shall only attempt to make certain general references to the work of the department and some recommendations that seem to me are warranted. We feel that all the divisions of this department have functioned well.

Live Stock Division.

By reason of the amount of money appropriated by the last legislature for tuberculosis eradication work, $50,000.00 for indemnity purposes, in addition to the considerable portion of the expenses for the regular maintenance of the dairy and livestock division, it would seem that some special reference to this particular work is justified.

In commenting upon the comparative efficiency of any department of state activities, it is not often that comparisons can be made with similar activities in other states, but in this particular work we have such basis for comparison because thirty-eight states are engaged in this particular line of work. The Tuberculosis Eradication Division of the United States Department of Agriculture issues a monthly report showing the accomplishments of each of the thirty-eight states. The showing of the Dairy and Live Stock Division in the State of Washington is so remarkable that a comparison is of general interest.

The eradication of bovine tuberculosis, especially among dairy herds, has been receiving constantly increasing attention throughout the United

States, and few states have shown greater interest or have accomplished more than the State of Washington. The following table, compiled from the official records, shows how greatly the work has increased during the past six years, and shows how the percentage of reactors has constantly decreased.

	Number Herds Tested	Number Animals Tested	Number React-ors	Per cent React-ors
July 1, 1914, to June 10, 1915	513	11,280	1,106	.098
June 10, 1915, to June 30, 1916	2,292	28,930	1,954	.067
July 1, 1916, to June 30, 1918	3,866	48,852	1,896	.039
July 1, 1918, to June 30, 1920	7.092	76,156	2,646	.034
Totals		171,780	7,951	

During the year, ending June 10, 1915, 9.8 per cent of the cows tested were diseased; the following year 6.7 per cent; the next biennium 3.9 per cent, and the last biennium 3.4 per cent. It is most unfortunate that, with all the money being expended, a little more authority cannot be given to this department to weed out diseased animals, which are spreaders to clean herds through auction sales and private sales to unsophisticated purchasers. At no period has the work of this department been so well supported by the public as during the past biennium, and the general sentiment of the people of the state is favorable to a vigorous campaign and cleaning up of this particular disease. All the large cities and many of the smaller ones, have adopted ordinances prohibiting the sale of unpasteurized milk unless from tuberculin tested herds. We have had many calls from cities throughout the state for a sample form of ordinance that would protect them and be reasonable to the dairymen. The form, as recommended and which is in accord with the ordinances generally passed, is given in full in the report of Dairy and Live Stock Division hereinafter.

The following cities of the state are at this time operating under an ordinance of this kind, which forces all dairymen selling milk in those cities and towns to have their herds tested:

List of Cities Having an Ordinance Requiring That Milk Be from Tuberculin Tested Cows or Pasteurized, or Both.

Aberdeen
Bellingham
Centralia
Chehalis
Colfax
Ellensburg
Everett
Garfield
Harrington
Hoquiam
Odessa
Olympia
Raymond
Seattle
South Bend
Spokane
Stanwood
Sultan
Tacoma
Toppenish
Vancouver
Wenatchee
Yakima.

This condition has been largely brought about by the educational campaign conducted by the Anti-Tuberculosis Association of the state, the State College, through the county agents, and the State Department of Agriculture, through its officers and employees. Until recently, bovine tuberculosis was not understood by many people. It is inconceivable to think that anybody would desire to sell diseased milk for human consumption, especially for feeding babies, merely for the paltry sums received from the sale of such milk.

With the present enlightenment of the general public, it would seem wise to make a reasonable appropriation for a campaign even more vigorous than anything heretofore undertaken. Owing to the splendid showing of this department, the Federal Government has recently assigned to the State of Washington a corps of Federal inspectors to co-operate with the state force. Most unfortunately, the entire state appropriation for indemnity to the owners of cattle found to be diseased was entirely exhausted in the early fall of this year, just about the time of the arrival of the Federal force. Since the Federal Government is co-operating to the extent of matching dollars with the state in this splendid work, I would recommend that the appropriation of $50,000.00 of the last legislature be increased to $75,000.00 for the next biennium.

It has been extremely difficult to secure the high class men that must be had for such work at the salary heretofore allowed. I would not recommend any increase of the force, but I do recommend that the salary of the chief of this division be increased from $2,500.00 a year to $3,600.00 a year, and that $12,500.00 a year be appropriated for the five veterinarians.

The following summary of monthly reports of the United States Department of Agriculture, Tuberculosis Eradication Division, shows the work accomplished by our force, as compared with other states:

Taken from Report of United States Department of Agriculture, Bureau of Animal Industry, Washington, D. C.

SUMMARY OF TUBERCULOSIS ERADICATION WORK IN COOPERATION WITH THE VARIOUS STATES, FROM JULY 1, 1919, TO JUNE 30, 1920.

STATE	Tuberculin Tests			Employes		Total Accredited Herds in the State
	Total No. of Herds or Lots	Total No. of Cattle Tested	Total No. Reacted	Bureau	State	
New York	971	27,671	3,150	62	50	235
Georgia	311	7,709	91	21	12	81
Maryland	773	10,804	669	74	16	617
Alabama	603	13.760	166	15	10	285
N. Dakota	1,413	23.546	750	34	73	1,548
Massachusetts	170	4,397	175	42	......	159
Maine	928	10,714	298	36	35	1,270
Rhode Island	35	510	22	6	......	30
Connecticut	215	5,727	953	12	11	80
New Hampshire	101	2,462	194	11	......	36
West Virginia	535	6,868	152	37	24	127
Illinois	1,210	20,519	1,155	102	61	378
South Carolina	289	6,659	129	24	25	256
Ohio	1.630	24.540	1.093	78	105	892
Iowa	1,157	27,603	2,211	56	40	176
Colorado	1	58	2	1	0	0
Wyoming	1	8	1	1	0	0
Texas	540	11,273	96	6	14	0
Kentucky	605	11,578	305	39	41	396
Pennsylvania	1,447	19,659	1,444	68	57	1,242
Montana	1,044	24,201	620	30	40	366
Indiana	837	16,891	498	67	36	864
Mississippi	2,024	21,461	102	54	15	288
Missouri	806	21,762	548	29	27	19
Michigan	720	14,149	434	61	20	663
Nebraska	544	12,943	643	25	48	141
Arkansas	125	2,260	42	7	10	56
Wisconsin	1,665	43,679	1,403	85	70	971
Vermont	2,085	37,978	3.241	61	53	474
Tennessee	625	14,796	202	38	25	604
Louisiana	414	9,938	237	20	0	28
Oklahoma	587	11,994	823	28	31	12
South Dakota	287	6,812	474	25	19	101
Oregon	2.069	22,295	608	24	27	251
Washington	4,629	47,659	1,539	32	60	128
Virginia	1,159	24,255	501	90	17	3,272
North Carolina	839	11,517	241	38	27	767
Minnesota	2,223	53,713	1,526	132	77	3,569
Utah	792	10,532	86	37	8	231
Idaho	988	11,161	237	28	16	38
Nevada	728	9,300	515	12	32	3
Florida	718	11.168	429	37	53	62
Kansas	445	12,689	310	45	12	336
New Jersey	260	5.880	424	17	12	128
Delaware	157	2.700	191	11	8	60
District of Columbia	425	1,538	7	19	0	85
Total	39,389	699.795	28,961	1.791	1,317	21,325
Miscellaneous	259	553	18	14	0	0

Horticultural Division.

The increasing importance of the state's horticultural interests makes it highly desirable, if not absolutely necessary, that the compensation, at least for some of the most important positions, should be increased. We believe the chief of this division, who is immediately responsible for this work, should be paid $3,600.00 a year, and the local representatives at Yakima, Wenatchee, and Seattle should be paid $3,000.00 a year. Other increases should be made, based on the importance of the field of operation and the likelihood of the men working therein being taken from the state by private business concerns. Men of exceptional training and ability for these important posts are not easily found, and when established, the compensation should be somewhat commensurate with the importance of their work to the industry in the districts in which they are located.

Fourth Division.

The chief of the Divisions of Floods, Feeds, Fertilizers, Drugs, Oil and Bakery Inspection, should receive at least $3,600.00 a year. A new oil inspection law is badly needed, as that work has been entirely abandoned since the United States Supreme Court decision nearly two years ago. The previous law was of very little, if any, value to the users of gasoline.

Other Recommendations.

Grades and inspections of all agricultural crops should be under the jurisdiction of the department of agriculture. The grading of fruits and potatoes is under the Division of Horticulture, and the establishing of various grades for seeds is provided for by law to be done by the seed division. The inspection of milk and milk products and the maintenance of standard quality comes under the dairy and live-stock division. It, therefore, seems decidedly inconsistent that the grading of hay and grain should be under another department of the state government, namely, the Public Service Commission. Either the Department of Agriculture should have the grading of all agricultural crops or should not be charged with the grading of any. In the grading of hay, special provision should be made, that the grade be fixed at the point of shipment, and not at the point of destination. Under the present method, dairymen and dealers not at a main distributing point, such as Seattle or Tacoma, but living in any rural district of the state, have no means of being protected against under grade hay, and the shipper has no means of protection against an unscrupulous buyer, who rejects a carload on the ground that it is not according to guaranteed quality.

Assuming that this grading of hay and grain should be added to the work of this department, together with the grading of agricultural seeds, it would seem most advisable to create a new division, to be called either the Seed Division, or the Agricultural division of the department, and the importance of the general management of this position should entitle the chief to a compensation of at least $3,000.00 a pear. All the grading and classing of agricultural crops for which standards are created in this state should come under the supervision of the commissioner of agriculture.

The Commissioner of Agriculture, whose salary was placed at $4,000.00 when the department was created, and which has never been increased, should, we believe, be placed at $5,000.00 a year. Few departments of the state government are more important to both producers and consumers of the state, and the salary of $5,000.00 is not out of proportion to that paid other officers in the state's employ.

State Fair.

The value of the State Fair to the agricultural and industrial development of the state is becoming more apparent each year. Increased patronage and wide-spread interest are reflected in the exhibits of agricultural crops, live stock, and Boys' and Girls' Club Workers, under the activities of the State College. To keep pace with the increased requirements, it has been necessary to build new barns, to put in a new spur track to accommodate the live stock shippers, build a new restaurant building in place of the unsanitary and fire-risk shacks that had heretofore been used for that purpose, to build a new dancing pavillion, and to build a new half-mile race track inside of the mile course. These permanent improvements, costing approximately $25,000.00, were built during the past year, without any appropriation from the last legislature for building improvements. During each of the six days of the last fair, hundreds and some days, thousands of people, who were anxious to pay fifty cents for admission to the grandstand, were turned away because there was no room. If the grandstand could be extended and enlarged to seat at least two thousand more people, it would make a difference of several thousand dollars a year in the receipts, and would meet an insistent demand of the public for this kind of accommodation.

It is imperative that the stock barns be extended and enlarged, a new building to house dairy products and a dairy machinery be erected, and a new building for machinery and industrial exhibits, and a new poultry building be erected. Instead of $41,400.00, which was appropriated last year for maintenance and operation of the fair, there should be at least $100,000.00 to take care of the State Fair for the next biennium and to furnish the funds for the necessary building program herein briefly outlined.

State Entomologist.

In our last biennial report, pages 12 to 16, reference was made to the importance of protecting the state against certain agricultural pests. The potato industry of the state is at this time greatly jeopardized by the spread of the Colorado potato beetle, which could have easily been exterminated had there been any authority and funds given to this department for such work. This lack has resulted in a serious spread of this expensive pest in various parts of eastern Washington. It is not yet too late to combat this pest if the present legislature will provide for a state entomologist with police authority, and a reasonable sum for expenses.

Markets.

The most important of all subjects today pertaining to agriculture, is that of better marketing methods for farm products. There is a necessity for co-operation between the various state authorities and the Federal Government, and the organizations of farmers' and producers' associations. The experience of those states where the Bureau of Farm Markets is under the direction of the State Department of Agriculture warrants the belief that this department, which establishes the grades and maintains the standards of the agricultural products, should also direct the activities of the farm markets bureau. The State College will necessarily pursue such market investigations as are incident to its educational work, but its functions and its location do not warrant the belief that it can carry on this business end of the agricultural interests of the state as well as the Department of Agriculture.

The agricultural development of our state up to date, and its future possibilities surely warrant careful consideration and liberal treatment by the next legislature. Respectfully submitted,

E. F. BENSON,

Commissioner of Agriculture, prior to April 1, 1920.

Dated October 1, 1920.

DAIRY AND LIVESTOCK DIVISIONS.

Hon. F. H. Gloyd, Commissioner of Agriculture, Olympia, Washington.

Sir: I have the honor to submit herewith the report of the Division of Dairy and Livestock for the biennium ending June 30, 1920.

At this time when the supply of animal products is hardly in proportion to the demand, the significance of the losses from diseases, especially those that can be prevented, come into recognition as practical economic questions. Although the farmers and stock men are trying to provide for the necessary increase in production to meet the growing demands of the nation, their success will be measured in part by the achievements of science in the prevention and control of animal diseases.

The work of the Dairy and Livestock Division is to supply these scientific principles along with practical ones in this work of disease control. For that purpose ths Division maintains a corps of ten inspectors, five of them veterinary inspectors, who, cooperating with the United States Bureau of Animal Industry, Washington State College, State Board of Health, Experiment Stations and County Agents, investigate the various contagious and infectious diseases affecting livestock; quarantine and supervise the methods for eradication and prevention of same, and whenever necessary and advisable for the protection of man and livestock, may, through the power conferred on them by Commissioner of Agriculture, and subject to his orders, slaughter such diseased animals.

This division has charge of the interstate inspection of all livestock, the tuberculin testing of cattle and the testing of horses for glanders. It is also charged with the duty of obtaining and disseminating information pertaining to livestock and dairy production, the collecting of license fees from retail milk vendors, factories and other dairy plants, also from the owners of stallions.

There are five dairy inspectors in this division, whose duties are to safeguard the public in the production and distribution of clean, wholesome milk and milk products. Their work includes the inspection of dairies, creameries, cheese factories, condensories, milk plants, and all places where dairy products are produced, manufactured or sold. Milk and cream testing is done and instruction given wherever needed. The examination for Babcock Testers License is given by the dairy inspectors at their respective headquarters or at the various factories when in the field.

Dairying.

Throughout the Northwest, and especially in the State of Washington. the dairy cow stands preeminently as a food producer, and the dairy industry is the foundation for the development of this great state. For this reason its condition is one for serious consideration. No large industry, such as that of dairying, can suffer a serious setback without an unfavorable reflection on every other interest and vice versa, the spoils of a flourishing industry have a beneficial effect on other interests.

During the past two years, the dairymen of Washington have had many vicissitudes that have kept the dairy industry in a state of uncertainty.

The dairy cow responds more readily and favorably to humane treatment, regular routine of feeding, and good care, than any other animal. No other animal brings in returns so promptly; no other animal utilizes the forage so economically. The dairy cow has been the livelihood for many a settler who cast his lot in the logged-off lands of western Washington, also to the homesteader of the arid lands of eastern Washington. In addition to the continuous financial income that flows from a well bred and cared for herd, there is the benefit to the soil, causing a noticeable increase in the yield of farm crops, and the undisputed aid rendered in the raising of pigs, chickens and other domestic animals.

The standard of the dairy cow in this state today is on a par with that of other states, and true it is that many of the best cows are within our bounds, not imported, but products of Washington farms. Formerly, it was thought necessary to go East or abroad for well bred dairy foundation stock, but today, and for some time past, this has been unnecessary. The mild uniform climate, the abundance of good water, and always green grass make this state one of the greatest of dairy states. A perusal of the various dairy journal and farm papers will reveal the fact that Washington is in the first division when it comes to long distance records, high milk records, butterfat records and all other commendable forms of competitive dairying.

Too little is known of the dairy industry of this great state. By many, it is considered too remote from the great industrial centers to be worthy of consideration. This, however, is an idea as ancient and unfounded as are the crude and old-fashioned methods of dairying that characterized the efforts of the pioneers. Today the scientific methods of Washington dairymen speak for themselves, and are substantiated by the quality of Washington butter, cheese and dairy products which have a world-wide reputation.

Dairy Inspection.

Dairy inspection has, for the past two years, advanced to a considerable degree, having operated under the new dairy code, which has enlarged the scope of the work.

Licensing of Babcock Test Operators

The provisions covering the licensing of all Babcock test operators has proven very successful. Examinations have been given in all sections of the State, and new applicants are coming in each month for examination.

The improvement in the method of testing is very marked. Standard glassware is being used in all factories and milk plants. The testers, that it, the machines, are carefully inspected as to condition, running up to speed without jar or vibration and general good repair. The use of the proper strength sulphuric acid is emphasized, that is, we urge the use of an acid hydrometer. Also the use of a tempering bath for the completed tests and the proper temperatures at which to hold these tests, and at which to read them, and the accuracy of reading. All these points have been carefully gone into with each and every person taking the examination, and the same detailed check is made each and every time we visit the factory, or plant at which testing is being carried out.

One factor in connection with the licensing of these operators is that it brings out the importance of the work and impresses upon the operator his or her responsibility. We feel that eventually a great deal of dissatisfaction and complaint will be overcome.

Farm and Factory Inspection.

The inspection of dairy farms, factories and milk at the factories has resulted in a marked interest being shown in the betterment of methods. equipment and the product.

Inspection of the factories is along sanitary lines and also as to the condition of the finished products. Wherever necessary, suggestions are made and orders given to make improvements. Generally speaking, the factories where milk products are manufactured are in good, sanitary condition.

The milk, as it arrives at the plant or factory, is inspected for flavor, odor, sediment, and temperature. A considerable amount of work was carried on this past year along the lines of temperature control, which has resulted in much good both to the producer and manufacturer. A great deal of milk is lost annually to the producer and a great deal of low grade products are manufactured as a result of improper cooling at the farm. We have carefully checked the temperature of the waters on many farms in different sections of the state, and find that it is possible to cool the milk to a reasonable degree by each and every dairyman.

The same careful inspection is given cream, for the manufacture of butter.

The inspection at the farms follows up this work, and in most cases, the results are very good. The factories and milk plants are co-operating with the Department in every way possible. Sediment testers have been installed in a great many instances, and we feel that it will not be very long before every factory is in possession of one. The improvement at the farms is also very good. Barns are being whitewashed and kept clean; yards and surroundings kept clean; milk and separator houses being erected; coolers and storage tanks installed for the care of milk and cream, which all tends to improve the general quality of the product.

Transportation of Milk and Cream.

The transportation of milk and cream from the farm to the factory and from from shipping points to the factories, has been carefully supervised. Drivers of trucks or wagons have been asked to equip their rigs with canvasses or tarpaulins wherever found necessary to protect the milk and cream while in transit. Railroad and boat lines have also received inspection in this respect, and wherever it was found that milk or cream cans were placed in contact with anything likely to damage the product, or where no protection was afforded the cans while awaiting transportation, the agents of these companies were notified to that effect.

City and Town Inspection.

The larger cities have their own inspectors, who look after the milk and cream supply, thus relieving our department from the immediate inspection. We have made it a point to co-operate fully with such inspectors, which not only assists them but gives our department a better knowledge of the condition of the milk and cream in these cities. The smaller towns rely entirely upon the state department for their inspection. A number of these smaller towns have dairymen who have installed small pasteurizing plants, equipping and handling them in a very creditable manner. That is, using vat pasteurizers, recording thermometers and proper means for sterilizing all bottles and utensils. Wherever the milk is handled raw, we have tried to get all dealers to have their cows tested for tuberculosis. We have been successful in many instances.

Registered Cans.

Registered cans found not rightfully used have been returned to their owners, and suggestions have been made to many relative to the value of registering their cans and cases with the Department of Agriculture.

Unwashed Ice Cream Containers and Utensils.

Ice cream manufacturers have been visited and have been informed of the law relative to the return of ice cream cans unwashed, from retailers. Many of these manufacturers have sent out circular letters to their trade advising them of this law, and have, in many cases, noticed a wonderful improvement in the condition of their ice cream cans when they were returned to the factory.

In addition to general inspection, milk, cream, ice cream, butter, cheese, and condensed milk have all been sampled on the open market, in the different sections of the state.

Respectfully submitted,
L. W. HANSON,
State Dairy Inspector.

REPORT OF COMMITTEE ON CONSTRUCTION OF DAIRY BUILDINGS AND ITS RELATION TO SANITATION.

Ernest Kelly, Chairman.

Recent investigations in dairy sanitation have drawn especial attention to certain essential factors in the production of milk of low bacterial count. By putting greater stress and more effort on these factors, it is possible for us to accomplish the greatest reduction of the bacterial count of milk with the least effort. Many things, however, are concerned in the production and handling of a desirable quality of foodstuff other than the mere bacterial count. It is well recognized by those who are in touch with the situation that desirable features of sanitation should be carefully studied and put into practice as fast as their successful accomplishment is practicable. Therefore, even though we may expend our greatest efforts toward the adoption of the essential factors in lowering the bacterial count, it is also desirable for us to study, perhaps more closely, those other corrollary factors which have less to do with the bacterial count, but which are intimately interwoven with the successful production of the better grades of milk. The time for filthy establishments for food handling has passed, and this is as true of the dairy industry as of any other branch of food production. While the sensible dairy inspector will hesitate to suggest radical changes in places already constructed, a full knowledge of desirable construction is essential in order that he may advise those dairymen who contemplate extensive changes or the erection of new buildings.

Aside from any question of sanitary significance, proper construction of dairy buildings makes for greater returns in comfort and profits. Properly constructed buildings are more durable, make work easier, add to the comfort of men and animals (and thereby increase production) and conserve the health of the cattle housed within them.

Your committee, at this time, does not feel that it has expended sufficient study on this question to justify a detailed report. The observations that follow are general and are presented principally for the purpose of creating discussion and leading inspectors into more constructive thought along these lines.

Stables.

Stables for dairy cows should be substantial. They should be constructed of material which is capable of withstanding extremes of temperature and moisture with the smallest possible deterioration. Such materials will, perhaps, require a greater initial outlay but will prove a good investment in the long run and will aid in sanitation. Stables should be built which are adequate to the needs of the farm; that is, they should not be so crowded as to hamper work or throw together two dissimilar parts of the farm enterprise. Crowded stables are not usually sanitary, nor is it easy to perform the work in them. Stables should be so arranged as to make work easy. In planning stables the care of the cattle, including feeding, milking watering and manure disposal, should be thoroughly considered in order that the work may be performed in a logical manner with the least possible effort. The construction, especially the floors, should be, so far as possible, wear-proof and water-proof. Such floors are durable, aid in conserving the liquid elements and are more easily kept in a sanitary condition. Walls, ceilings and other parts of the dairy stable should be of smooth construction so they can be easily cleaned. Light and ventilation are important. In almost any climate it is necessary to supply glass for admitting light. Even in the far South it is necessary at some times during the year to keep cattle within on frosty nights or out of the cold winds, with some means provided for closing the ordinary openings.

It is recommended by this committee that at least four square feet of window glass be allowed for each animal housed within the building. Ventilation is also necessary to preserve the health and comfort of the cattle, and to increase the desirability of the milk. No less than 500 cubic feet of air space for each cow should be allowed. Under some climatic conditions, considerably more than 500 feet is allowable, the maximum space being limited chiefly by the cost of construction of the building and the lowest outside temperatures which may be met with during the year. Obviously, stables containing large amounts of air space are harder to keep warm in the North, and the comfort of the cattle should be considered. It is advisable to provide, at a convenient point, an abundant supply of pure water. The stable should be kept reasonably warm in winter and cool in summer, which could be accomplished, to a great extent, through proper ventilation and air space. Floors under the cows should be warm or adequately protected by an abundance of bedding, and the cows should be confined in suitable stanchions, which allow free movement. Box stalls should be provided for sick animals and for cows at calving time, but separate from the stable in which the milking is done.

Farm Milk Houses.

Farm milk houses should be located so that they are convenient to the stable, but should not be subjected to contamination from the stable odor. If milk houses are too far removed from the barn, there is less likelihood that the milk of each cow will be carried to the milk house immediately after milking. The milk house should be located so that the drainage will be from the milk house toward the barn rather than vice versa. It should be constructed of smooth, durable, non-absorbent materials. The floors especially should be of concrete or similar material which can be thoroughly washed and which do not absorb spilled milk. The construction should be plain and simple, and the inside surfaces should be smooth and easily cleanable. The milk house should be provided with ample light, having window glass equivalent to at least ten per cent of the floor area. Ventilation should be through screened openings, and all openings should be thoroughly screened to prevent the entrance of flies and other insects. The dairy house should be provided with cold, running water and with steam.

Particular care should be taken to see to the proper waste disposal from the dairy house. If spilled milk and other material is simply swept out of the door, or drains around the house, it will attract flies and create odors which are not desirable. Waste should be carried well away from the milk house, preferably through a closed drain laid under ground.

Country Receiving Stations.

Country receiving stations should be so located as to be convenient to the wagon roads from which deliveries are made and to the railroad track on which the milk is to be shipped. They should be built of durable material and should have concrete floors, reinforced with iron plates where the greatest wear comes. Their inside construction should be smooth and cleanable; and they should be so arranged that no undue handling of the milk or any long series of pipes is necessitated. Country stations should be lighted with at least sufficient glass to equal ten per cent of the floor space, equally distributed to light all parts of the building, especially the milk handling room. Proper ventilation is also essential, and all openings should be thoroughly screened. In the screening of country stations, one obstacle met with is the receiving room, where the milk is taken in. During a great part of the time the door of this room must be kept open to receive the milk from the wagons of the farmers. This milk is then weighed and poured into the receiving can, from which it goes into the plant proper. Considerable milk is usually spilled on the floors of the receiving room and many flies are usually present. Wherever possible, a fan, giving a strong current of aid, should be placed directly over the receiving tank in order to keep the flies out of the milk or off the strainer. Of course, an abundant supply of running water must be available for the country receiving stations, and all sewage should be carried to some distance through trapped drains that will not allow the return of any foul odors to the plant. The floors should be so pitched as to drain thoroughly and be kept in such condition that they are free from holes or depressions where dirty water may gather.

CITY MILK PLANTS.

City milk plants should be located in a section where they are convenient for both receiving and distributing milk, and where they are free from contact with insanitary surroundings. They should be built of an adequate size for the necessary operations. Overcrowding of milk plants is a frequent cause of insanitary conditions. The arrangement of the plant should be carefully planned to facilitate the quick movement of milk with a minimum of piping and to conserve labor. The floors should be tight and non-absorbent, and the walls and ceiling should be of smooth construction. There should be separate rooms for the various operations, and these rooms should be thoroughly lighted, ventilated and screened.

Adequate toilet facilities should be provided for workers in the plant, and there should be a special effort to have a wash bowl in a convenient location for the workers in the milk room.

It will be seen from this report that buildings which answer the requirements of good sanitation also answer the requirements of good business. In fact, the cost of a sanitary building, all things considered, is little, if any, greater than the cost of a building which will prove unsatisfactory from a sanitary standpoint. This being the case, it is incumbent upon dairy inspectors to see that all buildings erected within the territory are carefully planned, durably constructed and kept in a sanitary condition at all times. Such procedure will not only serve best the production of milk of a high quality, but it will conserve labor, increase economy and stand as an invaluable advertisement to those who are interested in increasing the use of dairy products as a human food.

EXCERPTS FROM REPORT OF THE COMMITTEE OF THE INTERNATIONAL DAIRY AND MILK INSPECTORS ON DAIRY FARM INSPECTION.

By Prof. James A. Gamble, Chairman.

Inventory or stock-taking is practiced by successful enterprises, in order that those interested may know the true conditions of affairs. A brief survey of the developments in dairy farm inspection during the past decade should be equally valuable to those interested in still further improving the quality of milk and milk products.

Your dairy farm inspection committee have limited this report to those evolutions which have taken place in the handling of milk on the farm. The fact that milk quality is seldom determined at this point has left your committee without much real information upon which to determine the exact extent of farm improvement in milk which has taken place during the past twenty years. The general sampling practice has usually occurred in the city at railroad stations or from delivery wagons of dealers. When samples are taken on arrival in the city, time and temperature have often changed the quality during transit. For this reason, even when improved quality is shown by city records, such improvement cannot, in fairness, be entirely credited to better handling on the farm during production, for milk transportation during the last twenty years has, likewise, become more efficient.

Your committee is cognizant of the fact that milk is a very perishable food, produced in comparatively small quantities on millions of farms, under very different economic and sanitary conditions. During the infancy of the market milk business dairymen following lines of least resistance, elected to take the smallest part possible in the transportation and sale of this product.

The distribution of milk was taken over by a second party, the milk dealer. This agency furnished the cans and did the transporting and marketing. The dealer, guided by complaints of consumers, soon discovered that he was receiving as many grades of milk as he had dairies supplying the same. Consumers who complained received the best he had, and it became the custom to supply Mrs. Brown with milk from the best dairies, while Mrs. Blank could be depended upon to accept milk of almost any character delivered to her. This was the first milk grading. Discriminating consumers, however, increased rapidly in number, and the dealer was forced to visit the country, in order that he might observe the methods which resulted in good milk. The dealer, perhaps, was the first to carry the methods practiced by best dairymen to those producing inferior milk.

While this was taking place, cities became interested in the improvement of their milk supply from a community, rather than an individual standpoint. Men, known as milk inspectors, were appointed, and movements for the betterment of the supply, often based upon little information and experience, were undertaken. In due time, the milk inspector also arrived at the country and, as best he could, took up educational work among dairymen.

The City and Dairy Farm Inspection.

In dairy farm inspection, each municipality has had its own problems and made its own progress, the advances in the different jurisdictions usually depending upon the ability of the local health officer and the funds he was able to command for dairy farm inspection work. As a result, the milk situation in the different cities is so diverse that, even when main facts have been gathered, these permit but the use of generalities which are only reasonably true of the cities represented.

In this association, we have what might be termed the unusually active portion of the milk supervision field. The results secured in the municipalities listed in this association are a source of pride to all of us. This cannot be said of the country generally, yet when we consider the little preliminary training had by many dairy inspectors when first appointed, the results secured, while not so great as possible, have been truly commendable.

Looking at the question in a broad way, however, and taking the country as a whole, it appears that dairy farm inspection is in need of greater uniformity and standardization. In the absence of a master hand to steer and a guiding force to coordinate and make most effective the efforts of each worker, each little captain has steered his course as best he knew, usually without previous training and experience. This is evidenced by the multiciplicity of somewhat contradictory milk and cream regulations and requirements which prevail in the different cities and towns.

It is still true that a great deal of earnest effort is being wasted and many visits which carry no message of improvement are still being made to dairy farms. Less than half of our cities and towns have facilities for determining the bacteria count and cleanliness of the milk they receive. How can a dairy farm inspector visit farms and secure greatest results in the improvement of the quality of the product on these farms without such information? We still have dairy inspectors who rush out into the country about one day a week and say "Hello" to thirty or more dairymen. If this committee understands the function of dairy farm inspection correctly, the dairy inspector, in order to safeguard public health and secure maximum results, should be a trouble man of this industry. In a sense, his duties are similar to those of the trouble man employed by the telephone company. Being a trouble man, it is essential that he have complete information on the causes and prevention of milk troubles. Knowing how quality is controlled and being furnished with accurate information relative to the bacteria count, food value, cleanliness, or fault of the product supplied by each dairy in his jurisdiction, he is in a position to go to any dairy having trouble and not only locate, but correct the cause of the same. For the sake of best results then, he should be able to approach trouble at any dairy with as full information as possible. By confining his energy to the correction of trouble where it exists, greater good to the supply should result than when the dairy inspector's energies are dissipated in attempting to make thirty or more superficial visits in a day. Inasmuch as a trouble visit usually entails going carefully over the equipment and methods practiced during the production, such visits take time—lots of it—but are likely to produce permanent results.

While recognizing the splendid results that have, in some instances, been achieved by dairy farm inspectors, this committee wishes to point out that full results have been curtailed because full information regarding the bacteria count, food value, cleanliness, or faults in milk from the different dairies, has not been supplied the inspectors. For this reason, we recommend to health officers that such information be available and furnished such men.

The Dealer and Dairy Farm Inspection.

The milk dealer, more than any other agency, has dealt in realities from the first. He is the one who faced the quality of milk as delivered each day, and has spent a great deal of time and money in attempting to induce dairymen to do for their milk supply what they, for business reasons, should have been interested at the start in doing themselves. Being a business man, he soon organized his business, so that the price he paid the producer was sufficiently low to take care of all losses. Keen competition at times also forced him to sell for less than he should in order to hold trade, and these losses he also passed on to the producer. This is not changed and the price to the producer is based upon cost of production and supply and demand.

While grading is not universal as yet, the dealer undoubtedly has hastened the day when Farmer A, producing a better grade of milk than Farmer B, will receive a better price. Instances, too numerous to mention, of premiums paid by dealers for milk of low temperature, low bacterial count, high food value and freedom from visible dirt when delivered, might be cited in support of this statement. It is also true that much milk spoilage during the summer and fall has been prevented by the timely visits of the dealers' representatives to dairy farms. As an agency for passing on information of value to dairymen, he has done splendid service.

After summing up what has been attempted in bettering the present system of milk buying from the producer, one dealer has said: "It is obviously unfair for the farmer who makes no attempt to produce clean milk to be paid the same price as one who is extremely careful in all his operations."

The Dairy Press and Milk Improvement.

In discussing dairy farm inspection, we should not lose sight of the part played, during the past twenty years, by the great educator, the dairy press. The service of some publications for the betterment of conditions can hardly be overestimated, and certainly merits the highest commendation of this association. The dairy press has many times stood between the dairy industry and impracticable schemes for dairy improvement. This agency has been of splendid service in passing on to dairymen the true factors controlling quality and quantity in milk as these were discovered by national and other authorities.

The U. S. Dairy Division and Dairy Farm Inspection.

The Market Milk Section of the United States Department of Agriculture was established about thirteen years ago, to carry on investigations and educational work in dairy sanitation. This splendid work has gone forward continuously since that time, the major factors which control quality in milk have been ascertained, and methods worked out by which good milk of low bacterial content can be produced at our present dairies with minimum effort. As is well known to milk officials everywhere, the division maintains a force of men for the purpose of assisting milk officials to put into practice the truths discovered. This work is carried on in cooperation with State and city health departments. The Dairy Division teaches milk authorities how to safeguard milk supplies and to organize systems of local control which will be effective and continuous.

The efforts of this national body have always been a progressive and sustaining influence for the improvement of the milk supplies of cities and towns of this country, and until the organization of this association, was perhaps the only source to which dairy inspectors could turn for inspiration with confidence.

The Dairy Inspector's Relation to the Problem and His Qualifications.

It has been said that the dairy inspector is a public servant, paid out of the public funds to perform certain duties. Among these is seeing to it that the milk product sold in his jurisdiction becomes increasingly more wholesome. He is, by law, invested with great power over the producers of milk. Much depends upon his training and experience. His major duty is the protection of the public health. In order to secure best results, however, he should be cognizant of dairy industry problems and be as helpful to producers, dealers and consumers as is possible. Only a man with such qualifications can bring about the best results quickly and with the minimum of effort.

This committee believes that a dairy farm inspector, in order to be most efficient, should have, among other qualifications, the following training and experience:

1. A thorough and practical knowledge of milk production and handling.

2. A thorough scientific and practical knowledge of dairy cattle, feeding, breeding and management.

3. Thorough training in dairy and pathogenic bacteriology.

4. A thorough knowledge of the factors which control quality, quantity and healthfulness of milk.

5. A knowledge of dairy chemistry.

6. An abundance of tact and courage.

While many capable men with but little previous experience are doing good work in many communities as dairy farm inspectors, it must be said that, everything else being equal, trained men offer greater promise of service. In the opinion of this committee, graduates of State Agricultural colleges should possess the training best calculated to produce the most efficient inspectors. As has been said, such a man is not a bacteriologist, chemist, veterinanian, medical man, dairyman or farmer, but one especially trained for a place which is responsible and essential in nearly every community. Clean milk may be produced with but little additional effort, and this committee believes it to be the duty of the dairy inspector to show his producers how this can be done.

Permanent results is what we are after, and inasmuch as the production of clean milk is largely controlled by the attitude of the milker and other men handling the milk, successful milk inspection becomes largely a question of interesting the men to prevent inoculation with the multiplication of bacteria. Reforms should not be carried beyond the point where they will yield no adequate results. The economics of milk production and distribution must be considered if an adequate supply is to be forthcoming.

REPORT OF DAIRY INSPECTORS.

July 1, 1918, to June 30, 1920.

G. G. Carman, July 1, 1918, to June 30, 1920.
A. D. Fish, July 1, 1918, to June 30, 1920.
O. C. Van Houten, July 1, 1918, to June 30, 1920.
L. W. Hanson, April 7, 1919, to June 30, 1920.
David C. Dilworth, June 1, 1919, to Sept. 1, 1919, and Jan. 1, 1920, to May 30, 1920.

	Carman	Fish	Van Houten	Hanson	Dilworth
Dairy inspections	767	445	213	307	409
Creamery inspections	64	88	66	53	7
Store and depot inspections	238	1,278	329	290	35
Cheese Factory inspections	25	16	3	13	....
Condensed milk factory inspections	9	25	9	43	....
*Samples of milk for butter fat	511	1,773	214	1,823	10
*Samples of cream for butter fat	333	2,926	26	279	8
*Samples of ice cream	3	16	....	....	....
*Samples of cheese	....	71	12	1	....
*Samples of butter	4	165	32	907	....
*Samples for bacteriological, sediment and chemical examination	1,553	2,348	342	5,793	248
Milk cans inspected	8,291	18,158	11,654	630	558
Cans milk inspected	2,267	9,117	1,720	27,976	287
Cans cream inspected	519	3,506	940	185	6
Milk cans condemned	19	77	31	12	....
Cans milk condemned	98	265	14	1,782	380
Cans cream condemned	10	97	2	3	1
Cans returned to owner	232	131	149	54	11
Wagons inspected	125	159	139	10	48
Milk trains or trucks inspected	11	49	33	92	1
Complaints answered	52	128	42	5	13
Orders issued	281	541	154	1,651	110
Reinspections	89	437	170	108	28
Dairies, creameries, stores, depots and factories closed	21	21	14	....	4
Milk vendors' licenses collected	1	....	43	....	....
Factory licenses collected	4	4	12	....	....
Babcock testers applicants examined	117	52	145	80	....
Babcock testers licenses collected	38	16	97	....	....
Babcock testers permits issued	....	44	....	....	....
Babcock testers applicants failed	10	2	8	2	....
Complaints filed	47	32	69	7	....
Convictions	43	25	47	8	....
Fines	$645 00	$343 00	$709 50	$262 50	....

TOTALS

Dairy inspections	2,141
Creamery inspections	278
Store and depot inspections	2,170
Cheese factory inspections	57
Condensed milk factories inspected	86
Wagons inspected	481
Milk trains or trucks inspected	186
Reinspections	832
Total inspections	6,231

Samples milk for butter fat	4,331
Samples cream for butter fat	3,572
Samples of ice cream	19
Samples of cheese	84
Samples of butter	1,108
Samples for bacteriological, sediment and chemical examination	10,284
Total samples	19,398
Complaints answered	240
Orders issued	2,737

Milk cans inspected	39,291
Cans of milk inspected	41,367
Cans of cream inspected	5,156
Milk cans condemned	139
Cans of milk condemned	2,539
Cans of cream condemned	113
Cans returned to owners	577
Dairies, creameries, stores, depots and factories closed	60
Milk vendors' licenses collected	44
Creamery and milk plant licenses collected	20
Babcock test applicants examined	394
Babcock testers' licenses collected	151
Babcock testers' permits issued	44
Babcock test applicants failed	20
Complaints filed	155
Convictions	123
Fines	$1,960 00

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*All samples taken were submitted to Dr. C. W. Johnson and Professor George Olson, Department Chemists, for analysis.

DAIRY STATISTICS

Seemingly the task of securing reports from the various milk dealers, condenseries, creameries and ice cream plants, is one requiring unlimited patience and work. It is apparently almost impossible to get a satisfactory and complete report from many of the factories and an accurate interpretation is in many instances almost impossible.

The fact that the report ends with the calendar year rather than the fiscal year leaves six months' business to appear on the next report. This change was brought about by the new Dairy Code as adopted in 1919.

Following are the statistics of Dairy Products for the year ending December 31, 1919:

BUTTER PRODUCTION IN STATE, AS REPORTED, BY COUNTIES DURING YEAR 1919.

Counties	Pounds of Butterfat Produced	Pounds of Butter Manufactured	Value of Butter	Pounds of Butter Imported	Pounds of Butter Exported
Adams	8,788	10,860	$6,516	....	....
Benton	164,815	202,544	117,365	....	....
Chelan	34,599	36,053	25,297	....	....
Clallam	408,810	364,449	212,942	....	....
Clark	731,694	564,081	322,938	3,747	182,436
Columbia	13,867	16,988	10,071	....	....
Cowlitz	124,429	121.955	66,138	....	....
Douglas	2,387	....	....	....	....
Ferry	84,310	236,514	139,136	....	5,500
Grant	21,054	29,749	16.644	....	....
Grays Harbor	276,774	369,280	205,569	....	....
Island	221,309	254,965	151.584	....	....
Jefferson	254,968	320,769	188,378	....	....
King	4,728.143	4,085,918	3.433,250	....	....
Kitsap	183.104	186.666	107,647	....	....
Kittitas	182,942	340,777	202,328	....	2,015
Klickitat	28,780	28,456	17,693	....	....
Lewis	401,037	474,889	289,255	....	....
Lincoln	763	156	78	....	....
Mason	33,469	40.691	24,346	....	....
Okanogan	329,009	293,988	169,477	....	....
Pacific	760	416	250	....	....
Pend Oreille	66.297	62,630	37,372	....	....
Pierce	1,287,112	1,173,862	676.469	....	....
San Juan	131,802	167.279	98.029	....	....
Skagit	324.577	326.536	194,863	28,300	....
Snohomish	834.230	971,790	574,019	9,520	....
Spokane	4,685,998	3,314,801	2,169,579	....	....
Stevens	116.025	394,887	236,951	....	....
Thurston	242,109	286,277	182,183	3.450	....
Wahkiakum	447,755	523,971	294,569	....	....
Walla Walla	201,244	568,322	324,751	....	....
Whatcom	1,417.582	1,341,362	802.726	5,128	....
Whitman	110,786	85,220	54,903	350	3,500
Yakima	689,782	980.185	563,445	....	....
Totals	18,801,110	18,177,286	$11,916,761	50,495	193,451

MANUFACTURE OF ICE CREAM IN STATE AS REPORTED BY COUNTIES DURING YEAR 1919.

COUNTY	Gallons	Value
Adams	4,705	$6,116
Benton	6,280	7,558
Chelan	28,509	33,669
Clallam	4,000	5,000
Clark	15,721	18,465
Columbia	7,155	8.228
Cowlitz	80	90
Douglas	4,575	5,480
Ferry	7,573	9,845
Grant	2,250	3,042
Grays Harbor	69,318	85,488
Jefferson	9,373	10,976
King	720,902	742,042
Kitsap	57,932	69,733
Kittitas	8,050	10,062
Lewis	20.009	24,166
Okanogan	7,473	8.097
Pacific	3,510	3,912
Pend Oreille	6,429	8,041
Pierce	300,874	368,006
Skagit	27,503	31,753
Snohomish	43,729	54,814
Spokane	413,467	537,039
Stevens	1,905	2,286
Thurston	31,369	39.492
Walla Walla	29,406	37,894
Whatcom	89,918	96,286
Whitman	10,909	13,216
Yakima	58,148	70,759
Total	1,991,072	$2.311,555

CHEESE MADE IN STATE, AS REPORTED, BY COUNTIES DURING YEAR 1919.

COUNTIES	Pounds	Value
Clark	235,784	$68,287
Cowlitz	304,581	91,374
Grant	7,400	2,000
Grays Harbor	531,752	177,497
Jefferson	55,493	16,083
King	6,720	2,068
Lewis	247,036	76,581
Pierce	35,850	12,547
Skagit	88,432	28,298
Snohomish	179,421	54.220
Spokane	21,789	7.012
Wahkiakum	42,936	12,880
Walla Walla	18,792	6,013
Whitman	2,000	760
Yakima	120,680	42,238
Totals	1,898.666	$597.858

CONDENSED MILK PRODUCED IN STATE, AS REPORTED, DURING YEAR 1919

Pounds	132,402,231
Value	$15,044,708

VALUE OF BY-PRODUCTS PRODUCED IN STATE DURING YEAR 1919.

$2,311,312.

TOTAL AMOUNT OF MILK AND CREAM, AS REPORTED, BY COUNTIES DURING YEAR 1919.

Counties	Lbs. of Milk Produced	Gals of Milk Sold	Value of Milk Sold	Gals of Cream Sold	Value of Cream Sold
Adams	67,958	7,206	$3,588	782	$1,113
Asotin	29,200	3,650	1,825	....	....
Benton	120,613	15,994	7,965	960	1,952
Chelan	1,692,424	63,589	23,554	2,964	5,716
Clallam	516,500	46,475	24,375	41,468	81,830
Clark	7,553,689	361,710	169,648	13,140	23,077
Columbia	156,040	19,198	7,966	480	960
Cowlitz	3,019,161	50,996	18,868	92	200
Douglas	132,520	10,145	4,101	25	50
Ferry	40,896	5,617	2,736	17	40
Franklin	426,680	41,488	20,253	57	184
Garfield	61,680	7,710	4,464	90	249
Grant	267,886	30,232	22,615	385	776
Grays Harbor	11,034,866	387,657	177,095	15,128	38,079
Island	....	....	....	2,867	2,921
Jefferson	2,047,567	38,760	16,491	25	50
King	346,179,730	9,636,411	3,659,121	903,615	1,720,306
Kitsap	3,653,345	381,992	180,970	12,035	25,120
Kittitas	195,710	13,692	5,249	839	2,085
Klickitat	132,618	12,595	5,365	365	876
Lewis	3,475,025	123,758	51,697	4,589	10,189
Lincoln	217,942	21,921	10,526	729	1,595
Mason	124,000	14,600	5,840	....	....
Okanogan	228,620	25,509	11,885	1,170	2,671
Pend Oreille	108,220	9,954	3,674	121	259
Pacific	2,278,120	99,811	26,597	623	1,706
Pierce	16,168,719	1,490,240	683,119	58,950	135,622
Skagit	60,379,746	114,004	46,078	76,236	119,567
Skamania	39,420	3,650	1,825	150	300
Snohomish	17,549,614	723,850	310,573	54,388	97,552
Spokane	21,048,051	2,156,948	1,003,760	242,323	449,512
Stevens	393,812	44,888	19,017	1,197	2,595
Thurston	1,512,341	162,491	70,024	5,423	9,098
Wahkiakum	344,156	....	....	....	....
Walla Walla	2,566,957	187,483	76,803	17,711	35,296
Whatcom	24,344,211	393,644	163,533	95,140	109,981
Whitman	1,242,289	117,932	53,350	5,395	12,465
Yakima	8,810,772	426,243	174,008	59,959	93,243
Totals	538,162,099	17,252,143	$7,078,558	1,619,438	$2,987,244

CREAMERIES IN THE STATE OF WASHINGTON.

Adams County.

Ritzville Ice & Creamery Co. .... Ritzville

Benton County.

Kennewick Co-Operative Creamery .... Kennewick

Chelan County.

Meadowmoor Dairy .... Wenatchee
Leavenworth Purity Creamery .... Leavenworth
Wenatchee Creamery Co. .... Wenatchee

Clallam County.

Angeles Co-operative Creamery .... Port Angeles
Dungeness Co-operative Creamery Co. .... Sequim
Farmers Co-operative Creamery Co. .... Dungeness
Forks Co-operative Creamery Co. .... Forks

Clarke County.

Brush Prairie Creamery	Brush Prairie
Columbia Dairy Products Co.	Vancouver
Columbia River Creamery	Vancouver
Farmers Co-operative Creamery	Camas
Vancouver Creamery Company	Vancouver

Columbia County.

Dayton Creamery & Ice Works	Dayton

Cowlitz County.

Cowlitz Valley Creamery	Castle Rock
Kelso Creamery Company	Kelso

Ferry County.

Curlew Creamery	Curlew
Eureka Farms	Republic

Grant County.

Coulee City Co-operative Creamery	Coulee City

Grays Harbor County.

Aberdeen Dairy	Aberdeen
Elma Creamery	Elma
Montesano Creamery Co.	Montesano
Oakville Co-operative Cheese Co.	Oakville
Smith Dairy Farm	Aberdeen

Island County.

Oak Harbor Co-operative Creamery Co.	Oak Harbor

Jefferson County.

Bishop Creamery Company	Chimacum
Glendale Dairy	Pt. Townsend

King County.

Anderson Dairy, 3426 Interlaken Ave.	Seattle
Armour Creameries	Seattle
The Bradner Co., 1209 Western Ave.	Seattle
Ellensburg Produce Co., 915 Western Ave.	Seattle
Enumclaw Co-operative Creamery Co.	Enumclaw
J. L. Evans Creamery	Seattle
Hollywood Farm, 1609 Westlake Ave.	Seattle
Mutual Creamery Co.	Seattle
Purity Dairy Products, 199 Westlake Market	Seattle
Red Shield Creamery Co., 1510 Western Ave.	Seattle
Sheaf Creamery Co.	Seattle
Snowdrift Dairy, 1918 Westlake Ave.	Seattle
Swift & Co.	Seattle
Turner & Pease Co., 815 Western Ave.	Seattle

Kitsap County.

Bremerton Creamery & Produce Co.	Bremerton
Port Orchard Produce Co.	Port Orchard
Poulsbo Creamery	Poulsbo

Kittitas County.

The Bradner Co. (Kittitas Valley Creamery)	Ellensburg
Cle Elum Creamery Co., Inc.	Cle Elum
Consolidated Creamery Co.	Ellensburg
Ellensburg Produce Co.	Ellensburg

Klickitat County.

Columbia Dairy Products Co.	Trout Lake

Lewis County.

Farmers Co-operative Creamery Co.	Centralia
Lewis County Co-operative Creamery	Chehalis
Pleasant Valley Creamery	Chehalis
Purity Co.	Centralia
Winlock Co-operative Creamery Co.	Winlock

Mason County.

Mason County Fruit Growers Association	Shelton

Okanogan County.

Farmers Mutual Creamery Association	Tonasket
Methow Valley Creamery Association	Twisp
North Columbia Creamery	Pateros
Oroville Creamery	Oroville

Pend Oreille County.

Newport Creamery Association	Newport

Pierce County.

Henningson Produce Co.	Tacoma
Hospital for Insane	Steilacoom
Miller Bros. Co., 1532 Commerce St.	Tacoma
Roy Co-operative Creamery	Roy
Snell Milk and Cream Co.	Puyallup

San Juan County.

Richardson Creamery	Richardson
San Juan Co-operative Creamery Co.	Friday Harbor

Skagit County.

Anacortes Ice Co.	Anacortes
Carnation Milk Products Co.	Mt. Vernon
Olson Creamery Co.	Mt. Vernon
Skagit County Dairymens Association	Burlington
West Coast Dairy	Anacortes

Skamania County.

Skamania Creamery Co.	Stevenson

Snohomish County.

Arlington Co-operative Association	Arlington
Coast Ice & Cold Storage Co.	Everett
Fern Bluff Creamery	Monroe
Granite Falls Creamery	Granite Falls
Holcomb Dairy	Snohomish
Independent Dairy	Monroe
Snohomish Creamery Co.	Snohomish
Sultan Basin Creamery	Sultan

Spokane County.

Armour's Creameries, No. Bernard St.	Spokane
J. B. Chaney Creamery	Spokane
Commercial Creamery Co.	Spokane
Deer Park Creamery	Deer Park
The Fairmont Creamery Co.	Spokane
Hazelwood Co., Ltd.	Spokane
Pine Creek Dairy, 168 S. Division St.	Spokane
Spokane Dairy Products Co.	Spokane

Stevens County.

Curlew Creamery Co.	Chewelah
Old Dominion Creamery	Colville

Thurston County.

Alderwood Farm	Nisqually
Olympia Dairy Products Co.	Olympia
Olympia Ice Cream Co.	Yelm
Tenino Creamery	Tenino

Wahkiakum County.

Farmers Co-operative Creamery & Warehouse Association	Grays River
Ferndale Creamery Co.	Grays River
Skamokawa Farmers Creamery Association	Skamokawa

Walla Walla County.

Burbank Creamery	Burbank
Valley Dairy Products	Walla Walla
The Walla Walla Creamery	Walla Walla
Washington State Penitentiary	Walla Walla

Whatcom County.

Blaine Creamery Co.	Blaine
Ferndale Creamery	Ferndale
Ford Creamery Co., Inc.	Bellingham
Royal Dairy Products Co.	Bellingham
Whatcom County Dairymen's Association	Bellingham
Whatcom County Dairymen's Association	Lynden

Whitman County.

Jersey Creamery Co.	Colfax
Tekoa Creamery	Tekoa
Washington State College	Pullman

Yakima County.

Cascade Creamery Co.	Yakima
Cowiche Creamery	Cowiche
Milk Products Co.	Sunnyside
Mutual Creamery Co.	Toppenish
Yakima City Creamery	Yakima

CONDENSERIES IN THE STATE OF WASHINGTON.

Clarke County.

Henningson Produce Co.	Washougal

Grays Harbor County.

Montesano Creamery Co.	Montesano
Seattle Ice Cream Co.	Montesano

King County.

Borden's Condensed Milk Co.	Auburn
Canyon Condensed Milk Co.	Issaquah
Canyon Condensed Milk Co.	Enumclaw
Carnation Milk Products Co.	Kent
Federal Condensed Milk Co.	Seattle

Lewis County.

Carnation Milk Products Co.	Chehalis

Skagit County.

Carnation Milk Products Co.	Mt. Vernon
Carnation Milk Products Co.	Sedro Woolley
Federal Condensed Milk Co.	Mt. Vernon

Snohomish County.

Carnation Milk Products Co.	Monroe
Carnation Milk Products Co.	Stanwood
Finstad & Utgard	Conway (Fir Sta.)
Meads Cream Co.	Snohomish
Snohomish Dairy Products Co.	Snohomish

Spokane County.

Hazelwood Co., Ltd.	Spokane

.Wahkiakum County.

Washington-Hazelwood Co.	Cathlamet

Whatcom County.

Carnation Milk Products Co.	Everson
Carnation Milk Products Co.	Ferndale
Royal Dairy Products Co.	Bellingham
Whatcom County Dairyman's Association	Lynden

Yakima County.

Cascade Creamery Co.	Yakima
Mutual Company	Toppenish
Yakima City Creamery	Yakima

CHEESE FACTORIES IN THE STATE OF WASHINGTON.

Clarke County.

Columbia Dairy Products Co.	Battleground
The Lackamas Valley Co-operative Dairy Association	Proebstel
Washington Hazelwood Co.	Amboy

Cowlitz County.

Washington Hazelwood	Cathlamet

Grays Harbor County.

Oakville Co-operative Cheese Company	Oakville
Satsop Co-operative Cheese Factory	Satsop

Jefferson County.

Bishop Creamery Co.	Chimacum

Lewis County.

Cowlitz Valley Association	Toledo

Pacific County.

Green Meadow Cheese Factory	South Bend
Willapa Valley Cheese Factory	Menlo

Pierce County.

Orting Cheese Company	Orting

Skagit County.

Finstad & Utgard	Conway
Skagit County Dairymen's Association	Burlington
Hamilton Cheese Factory	Hamilton

Snohomish County.

Arlington Co-operative Association	Arlington

Wahkiakum County.

Washington Hazelwood Co.	Cathlamet

Whitman County.

Washington State College	Pullman

Yakima County.

Cowiche Butter & Cheese Co.	Cowiche

ICE CREAM FACTORIES.

Adams County.

Ritzville Ice Cream Co.	Ritzville

Benton County.

Kennewick Co-operative Creamery	Kennewick
Willow Basket Confectionery	Prosser

Chelan County.

Leavenworth Purity Creamery	Leavenworth
Meadowmoor Dairy	Wenatchee
Wenatchee Creamery Co.	Wenatchee

Clallam County.

Port Angeles Dairy	Port Angeles

Clarke County.

Columbia Dairy Products Co.	Vancouver
Farmers Co-operative Creamery	Camas

Columbia County.

Dayton Creamery & Ice Works	Dayton

Cowlitz County.

Kelso Creamery Co.	Kelso

Douglas County.

Silas R. Towne	Waterville

Ferry County.

Curlew Creamery Co.	Curlew
Eureka Farms	Republic

Grant County.

Coulee City Co-operative Creamery	Coulee City

Grays Harbor County.

Aberdeen Dairy, 310 N. E. St.	Aberdeen
Carlton Dairy Co.	Hoquiam
Pearson's	Hoquiam
Satsop Farmer's	Hoquiam
Smith Dairy Farm	Abredeen
Union Dairy Farm	Aberdeen

Jefferson County.

Glendale Dairy	Port Townsend

King County.

Amanio	Seattle
Anderson Dairy, 3126 Interlaken Ave.	Seattle
Dairy Products Co.	Seattle
Hollywood Farm, 1609 Westlake Ave.	Seattle
Mutual Creamery Co.	Seattle
Pure Milk Dairy, Inc., 1512 7th Ave.	Seattle
Purity Dairy Products Co.	Seattle
Pig'n Whistle, 2nd Ave.	Seattle
Rogers Candy & Ice Cream Co., 824 Union St.	Seattle
Rogers Candy & Ice Cream Co., 4339 14th Ave. N. E.	Seattle
Royal Dairy, 5426 Leary Ave.	Seattle
Seattle Dairy, 1415 Eighth Ave.	Seattle
Seattle Ice Cream Co.	Seattle
Standard Confectionery	Seattle
Stokes Ice Cream Co., 411 No. Howard St.	Seattle
Velvet Ice Cream Co., 609 Pine St.	Seattle

Kitsap County.

Bremerton Creamery & Produce Co.	Bremerton
Port Orchard Produce Co.	Port Orchard
Poulsbo Creamery	Poulsbo

Kittitas County.

Ellensburg Produce Co.	Ellensburg
A. F. Schultz	Ellensburg

Lewis County.

Chehalis Ice Co.	Chehalis
Purity Co.	Centralia

Okanogan County.

Farmers Mutual Creamery Co.	Tonasket
North Columbia Creamery	Pateros
Okanogan Ice Cream Factory	Okanogan
Oroville Creamery	Oroville

Pacific County.

South Bend Ice Company	South Bend
W. H. Walters	Raymond

Pend Oreille County.

Newport Creamery Association	Newport

Pierce County.

Barto Ice Cream and Candy Co.	Tacoma
Knox's Incorporated, 952 Pacific Ave.	Tacoma
Meadowmoor Dairy, 908 Broadway	Tacoma
Modern Dairy	Tacoma
The C. T. Muehlenbruch Co., 917 Broadway	Tacoma
O. K. Dairy, 4527 So. Yakima Ave.	Tacoma
Olympic Ice Cream, 954 Court C.	Tacoma
Puyallup Ice Cream Co.	Puyallup
Royal Ice Cream Co., 913 A St.	Tacoma
Snell Milk and Cream Company	Puyallup
Thurston County Dairy Association	Camp Lewis

Skagit County.

Anacortes Ice Co.	Anacortes
Olson Creamery Co.	Mt. Vernon
West Coast Dairy	Anacortes

Snohomish County.

Coast Ice and Cold Storage Co.	Everett
Granite Falls Creamery	Granite Falls
Harris Confectionery	Everett
Holcomb Dairy	Snohomish
Independent Dairy	Monroe
K. & K. Ice Cream Co.	Everett
Meadowmoor Dairy & Ice Cream Co.	Everett
Peerless Dairy	Everett
A. B. Sprau	Monroe
Sultan Basin Creamery	Sultan

Spokane County.

Alpine Sweets, No. 6 Post St.	Spokane
The Antlers, 512 Riverside	Spokane
Aster Candy Co., W. 822 Riverside	Spokane
Broadview Dairy, 411 Catalda Ave.	Spokane
Davenport's, 1st Ave. and Post St.	Spokane
Deer Park Creamery	Deer Park
Hazelwood Co., Ltd., Pacific and Brown St.	Spokane
Hiawatha-Holstein	Spokane
Palm Candy Co., W. 519 Riverside	Spokane
Salter's, 122 Wall St.	Spokane
Spokane Bakery Co., Post and Broadway	Spokane
Staples Candy Co., W. 821 Riverside	Spokane
Velvet Ice Cream and Confectionery, E. 1528 Sprague	Spokane

Stevens County.

Old Dominion Creamery Co.	Colville

Thurston County.

Capital City Creamery	Olympia
Olympia Dairy Products Co.	Olympia

Walla Walla County.

Beardon's Ice Cream Co.	Walla Walla
Burbank Creamery	Burbank
Hawkins Confectionery	Walla Walla
A. Neumister	Walla Walla
Valley Dairy Products	Walla Walla
Walla Walla Creamery	Walla Walla

Whatcom County.

Ford Creamery Co., Inc.	Bellingham
Royal Dairy Products Co.	Bellingham
Whatcom County Dairy Association	Bellingham

Whitman County.

Jersey Creamery Co.	Colfax
Washington State College	Pullman

Yakima County.

Cascade Creamery Co.	Yakima
Mutual Creamery Co.	Toppenish
J. Roy Miller	Grandview
Yakima City Creamery	Yakima

Names, locations and marks of ownership of firms operating under chapter 101, Laws 1915, being an act relating to the registration of marks upon cans and tubs used in transporting dairy products:

	NAME AND LOCATION	BRAND
1.	Olypmic Ice Cream Company, Tacoma	Olympic Ice Cream, Tacoma
2.	Dungeness Co-operative Creamery Co., Sequim	D. C. C. Co.
3.	Bremerton Creamery & Produce Co., Inc., Bremerton	Bremerton Creamery, Pasteurized Milk and Cream
4.	The Bradner Company, Seattle	Brass band marked "Bradner"
5.	Glendale Creamery Co., Chimacum	Glendale
6.	Purity Milk Products & Refrigerating Co., Centralia	Purity
7.	Hazelwood Company, Ltd., Spokane	Hazelwood'
8.	Swift & Company, Seattle	Top red, bottom yellow, handles and sides natural color
9.	Commercial Creamery Co., Spokane	Planchard
10.	Turner & Pease Co., Seattle	T. & P. Co., Seattle
11.	A. Kristoferson, Inc., Seattle	Kristoferson
12.	Pleasant Hill Dairy, Wenatchee	Pleasant Hill Dairy
13.	Pine Creek Dairy Co., Spokane	P. C. D.
14.	The Royal Dairy Company, Bellingham	R. D. Co.
15.	Hollywood Farm, Seattle	"H" and "F" interlocked
16.	Cowlitz Valley Creamery, Castle Rock	C. V. C.
17.	Montesano Creamery Co., Montesano	M. C.
18.	The Mutual Creamery Co., Seattle	Mutual Creamery Company, Jensen Creamery Company, Klock Produce Company
19.	Mayflower Dairy, Inc., Seattle	M. F. D.
20.	Elma Creamery Co., Elma	E. C.
21.	Cascade Creamery Co., Yakima	Cascade Creamery Co., C. C. C.
22.	Brooklyn Dairy Products Co., Seattle	Brooklyn Dairy, a brass leaf representing clover leaf, N. C. D., BR D CO.
23.	The Independent Dairy, Inc., Seattle	Independent Dairy
24.	Pure Milk Dairy, Seattle	P. M. D.
25.	The Independent Dairy, Inc., Seattle	Redmond Creamery
26.	S. Stray, Seattle	Seattle D. and M. B. D.; Seattle Dairy
27.	Swift & Company, Seattle	Swift
28.	Miller Bros. Co., Tacoma	Miller Bros. Co., Tacoma
29.	Wingard Bros. & Co., Tacoma	W. B. Co., Tacoma, Wash.
30.	Coast Ice & Cold Storage Co., Everett	C. I. & C. S. Co.
31.	Lewis County Co-operative Creamery, Chehalis	L. C. Coop-Cry
32.	Broadview Dairy Co., Spokane	B. D. Co. and Broadview
33.	Royal Ice Cream Co., Tacoma	R. I. C. C.
34.	Pioneer-Alpine Dairy, Everett	P. A. D.
35.	Armour & Company, Seattle	A.
36.	Broadway Dairy Co., Seattle	Northwestern Dairy Co., N. W. D. and E. S. D.
37.	Kennewick Co-operative Creamery Co., Kennewick	K. C. C. Co.
38.	Dairy Products Co., Seattle	Dairy Products Co.
39.	H. C. Stokes, Inc., Seattle	Stokes
40.	Bayview Dairy, Inc., Seattle	B. V. D.
41.	Ellensburg Produce Co., Seattle	E. P. Co.
42.	M. Gye (American Dairy), Tacoma	A. D. and G.

	NAME AND LOCATION	BRAND
43.	Henningsen Produce. Co., Tacoma	H. P. Co., Tacoma; T. C. C., Tacoma; Lake Park Cry.
44.	Smith's Dairy Farms, Aberdeen	Smith's Dairy Farms; S. D. & S.
45.	F. S. Stimson Company, Seattle	Hollywood Farm
46.	Royal Dairy Products Co., Bellingham	R. D. P. Co.
47.	Anderson Creamery Co., Seattle	A. C. C.
48.	Westlake Dairy, Seattle	W. L. D., W. D. and C. D.
49.	A. D. Vaninetti, Monroe	A. G. Vaninetti, Monroe, Wash.
50.	A. Kristoferson, Inc., Seattle	Alfred Kristoferson, Pasteurized Milk and Cream, Seattle, Wash.
51.	Spokane Dairy Products Co., Spokane	H. H. D. and S. D. P. Co.
52.	Sultan Basin Creamery, Sultan	S. B. Cry and S. B. Cry., Sultan, Wash.
53.	Carlton Dairy Co., Hoquiam	C. D. C and C. D. Co.
54.	Holcomb Dairy Co., Snohomish	H. D. Co.
55.	Consolidated Creamery Co., Ellensburg	S

LIVESTOCK STATISTICS BY COUNTIES

(State Board of Equalization Report)
(1919)

1.—HORSES

	COUNTIES	ONE YEAR OLD			TWO YEARS OLD			THREE YEARS OLD AND OVER			WORK HORSES			STALLIONS			
		No.	Value	Aver'ge Value	No.	Value	Aver'ge Value	No.	Value	Aver'ge Value	No.	Value	Aver'ge Value	No.	Value	Average Value	
1	Adams	1,288	$18,590	$14 43	1,129	$26,770	$23 71	987	$31,905	$32 33	8,881	$462,465	$52 07	42	$5,600	$133 33	1
2	Asotin	622	9,210	14 80	567	11,065	19 51	1,680	40,803	24 28	1,923	96,972	50 42	20	1,400	70 00	2
3	Benton	648	7,395	11 41	537	9,375	17 46	930	19,015	20 45	3,389	116,660	34 42	49	2,965	60 51	3
4	Chelan	110	1,220	11 09	139	2,240	16 11	950	18,008	18 95	2,255	100,038	44 36	.....	....	....	4
5	Clallam	64	1,061	16 57	117	2,190	18 71	499	12,421	24 89	577	30,011	52 01	4	550	137 50	5
6	Clarke	132	1,610	12 19	220	3,685	16 75	413	5,600	13 55	3,917	121,235	30 95	9	590	65 55	6
7	Columbia	550	5,925	10 77	591	9,490	16 05	911	19,[illegible]7	21 23	4,107	156,836	38 19	38	6,025	158 55	7
8	Cowlitz	98	937	9 56	89	1,163	13 06	201	3,041	15 12	1,842	32,628	24 81	13	589	45 34	8
9	Douglas	1,985	18,422	9 28	1,049	29,276	15 02	1,882	45,916	24 40	9,461	368,215	38 39	76	10,662	140 28	9
10	Ferry	422	5,439	12 89	595	11,758	19 76	991	29,414	29 68	801	40,364	50 59	17	1,601	94 17	10
11	Franklin	687	8,410	12 24	504	9,945	19 73	1,021	25,092	24 58	2,355	92,048	39 09	24	2,030	84 58	11
12	Garfield	874	10,482	11 99	964	18,820	19 52	1,697	47,346	27 90	3,811	165,314	43 38	38	6,000	157 89	12
13	Grant	1,449	19,212	13 26	1,297	26,088	20 11	1,268	29,062	22 92	7,197	240,005	33 35	49	8,888	181 39	13
14	Grays Harbor	143	1,990	13 91	97	2,285	23 55	176	5,573	31 66	1,111	49,730	44 76	5	425	85 00	14
15	Island	25	410	16 40	25	702	28 08	159	3,705	23 30	595	24,220	40 71	.....	....	....	15
16	Jefferson	16	310	19 37	14	415	29 64	36	947	26 30	492	20,581	41 83	2	250	125 00	16
17	King	611	12,587	20 60	581	17,517	30 15	3,543	141,720	40 00	8,927	592,306	66 35	91	182,000	200 00	17
18	Kitsap	7	90	12 85	14	272	19 46	559	11,333	20 27	373	13,215	35 42	1	200	200 00	18
19	Kittitas	614	8,080	13 16	479	14,225	29 70	1,313	34,845	25 78	3,518	213,000	60 46	29	3,175	109 50	19
20	Klickitat	597	8,125	13 61	611	11,995	19 63	3,119	76,896	24 65	2,427	125,561	51 74	28	2,712	96 86	20
21	Lewis	497	7,451	14 99	327	7,560	23 12	259	7,347	28 37	2,938	140,247	47 74	2	250	125 00	21
22	Lincoln	2,143	32,620	15 22	2,133	46,295	21 70	1,955	68,257	34 92	14,449	699,653	48 42	65	8,725	134 23	22
23	Mason	12	160	13 33	22	425	19 32	393	8,495	21 61	204	9,063	44 42	3	200	66 66	23
24	Okanogan	1,643	12,975	7 90	1,475	23,405	15 87	3,511	79,130	22 54	7,845	269,210	34 32	77	6,515	84 61	24
25	Pacific	45	643	14 28	41	942	22 98	112	2,690	24 02	734	36,078	49 15	2	225	112 50	25
26	Pend Oreille	122	1,725	14 18	100	2,010	20 10	296	7,325	24 75	837	43,772	52 30	1	100	100 00	26
27	Pierce	62	1,105	17 82	85	2,460	28 94	1,344	40,915	30 44	1,217	61,790	50 77	11	675	61 36	27
28	San Juan	118	1,855	15 72	88	2,437	27 69	269	7,393	27 48	588	29,325	49 87	1	150	150 00	28
29	Skagit	134	1,805	13 47	150	3,415	22 77	627	20,555	32 78	2,479	90,795	36 62	2	200	100 00	29
30	Skamania	2	10	5 00	4	50	12 50	13	297	22 85	192	8,680	45 21	1	75	75 00	30
31	Snohomish	64	1,045	16 32	113	3,500	30 97	622	22,010	35 38	3,286	106,455	32 39	38	2,005	52 76	31
32	Spokane	1,187	15,470	13 03	1,065	20,790	19 52	1,742	49,085	28 18	12,347	435,555	35 27	75	7,555	100 73	32
33	Stevens	812	8,345	10 28	1,423	20,917	14 70	2,022	44,175	21 85	3,052	123,095	40 33	13	1,038	79 85	33
34	Thurston	320	3,498	10 91	272	4,772	17 54	677	16,907	24 97	865	37,494	43 34	4	615	153 75	34
35	Wahkiakum	6	110	18 33	2	20	10 00	11	190	17 27	287	8,282	28 85	.....	....	....	35
36	Walla Walla	945	14,495	15 34	802	18,852	22 88	1,675	44,618	26 64	7,715	356,082	46 15	50	9,820	196 40	36
37	Whatcom	78	954	12 23	101	2,218	21 96	103	2,958	28 72	3,781	117,082	31 12	5	316	63 20	37
38	Whitman	2,857	70,427	24 65	2,630	103,013	39 17	2,030	91,850	45 25	21,701	1,218,657	55 70	157	18,665	118 80	38
39	Yakima	2,002	26,480	13 23	2,872	61,540	21 43	4,747	114,170	24 05	8,141	458,080	55 76	38	7,260	101 06	39
	Average totals	23,981	$340,673	$14 23	24,228	$538,307	$22 02	44,743	$1,230,841	$27 50	100,207	$7,207,209	$45 55	1,080	$300,051	$277 82	

LIVESTOCK STATISTICS BY COUNTIES—Continued.

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	COUNTIES	2			3.—STOCK CATTLE									4			
		MULES AND ASSES			YEARLINGS			TWO YEARS OLD			THREE YEARS OLD AND OVER			MILCH COWS			
		No.	Value	Aver'ge Value	No.	Value	Aver'ge Value	No.	Value	Aver'ge Value	No.	Value	Aver'ge Value	No.	Value	Average Value	
1	Adams	1,704	$89,875	$52 74	1,684	$25,120	$14 92	701	$13,770	$19 64	1,153	$26,145	$22 68	2,312	$57,210	$24 74	1
2	Asotin	106	4,105	38 72	2,346	35,885	15 29	2,092	41,760	19 96	3,270	82,196	25 13	707	21,225	30 02	2
3	Benton	305	9,695	31 79	1,463	13,550	9 26	945	15,420	16 32	1,147	21,665	18 89	2,382	59,485	24 97	3
4	Chelan	317	16,100	50 79	1,232	11,760	9 54	757	14,125	18 66	531	10,780	20 30	2,285	74,320	32 53	4
5	Clallam	12	842	28 50	876	8,497	9 70	726	10,572	14 56	413	7,733	18 72	3,150	74,959	23 79	5
6	Clarke	99	2,990	30 20	2,680	20,530	7 66	2,501	25,015	10 00	1,160	19,995	17 23	9,900	227,590	22 98	6
7	Columbia	1,544	68,355	44 27	1,417	13,662	9 64	1,158	16,003	13 88	1,501	28,095	18 72	1,118	26,317	23 65	7
8	Cowlitz	22	409	18 61	1,713	8,605	5 02	1,297	10,175	7 84	998	10,725	10 75	4,069	52,898	13 00	8
9	Douglas	941	38,372	40 77	1,950	15,930	8 17	1,240	14,836	11 96	865	12,188	14 09	2,899	61,206	21 11	9
10	Ferry	86	3,537	41 13	1,968	31,097	15 80	1,414	30,836	21 81	1,379	35,802	25 96	1,823	59,211	32 48	10
11	Franklin	934	43,170	46 22	723	8,267	11 43	593	10,218	17 23	835	18,532	22 19	343	11,808	34 42	11
12	Garfield	443	17,094	38 59	2,112	21,832	10 34	1.714	25,114	14 65	2,857	57,754	20 22	912	20,224	22 17	12
13	Grant	507	19,437	38 34	2.660	31,008	11 66	2,586	49,845	19 27	1,734	29,860	17 22	2,509	64,580	25 74	13
14	Grays Harbor	9	245	27 22	1,092	17,895	16 39	983	16,775	17 06	569	12,760	22 42	4,384	109,470	24 97	14
15	Island	12	325	27 08	626	4,995	7 98	497	6,268	12 61	449	7,482	16 66	1,534	38,103	24 83	15
16	Jefferson	17	375	22 06	634	9,435	14 88	257	5,040	19 61	230	4,900	21 30	1,676	54,390	32 45	16
17	King	438	22,776	52 00	3,225	45,380	14 07	2,733	57,393	21 00	2,341	51,502	22 00	24,143	799,133	33 10	17
18	Kitsap	8	160	20 00	523	4,457	8 52	151	2,083	13 79	294	5,925	20 15	2,364	67,667	28 62	18
19	Kittitas	132	6,175	46 78	4,164	54,575	13 10	2,805	60,325	21 50	3,783	92,330	24 41	3,914	150,060	38 34	19
20	Klickitat	260	10,213	59 28	4,607	49,075	10 65	2,948	48,000	16 28	4,834	129,621	26 81	1,646	49,838	30 28	20
21	Lewis	77	2,593	33 68	4,580	50,156	10 95	2,267	37,798	16 67	1,107	22,381	20 22	11,555	330,264	28 58	21
22	Lincoln	1,883	91,442	48 56	3,388	39,728	11 72	2,280	32,865	14 42	2,514	49,897	19 85	4,129	94,928	22 99	22
23	Mason	2	50	25 00	628	5,619	8 94	452	6,842	15 13	204	3,726	18 26	1,440	35,990	24 99	23
24	Okanogan	320	12,465	38 95	18,198	216,080	11 87	5,094	128,600	25 24	9,603	251,190	26 16	3,859	122,115	31 64	24
25	Pacific	2	100	50 00	1,179	9,042	7 67	965	12,918	13 38	1,128	27,357	24 25	2,559	87,323	34 12	25
26	Pend Oreille	18	740	41 13	751	7,280	9 73	422	6,578	15 52	223	4,710	21 12	1,136	28,937	25 47	26
27	Pierce	29	1,475	50 86	1,742	17,445	10 01	1,363	26,090	19 14	4,864	140,835	28 95	3,349	109,395	32 66	27
28	San Juan	......	....	......	547	6,367	11 64	288	4,663	16 19	355	6,177	17 40	1,479	35,988	24 33	28
29	Skagit	69	1,520	22 03	2,791	20,980	7 51	2,100	30,480	14 51	1,606	32,795	20 42	11,218	296,940	26 48	29
30	Skamania	22	638	29 00	215	2,150	10 00	153	2,295	15 00	269	5,395	20 05	335	8,425	25 14	30
31	Snohomish	36	975	27 08	3,732	25,740	6 89	2,866	37,430	13 06	407	7,915	19 44	16,108	498,375	30 98	31
32	Spokane	615	25,970	42 22	3,483	40,115	11 52	2,895	42,835	17 89	1,479	34,385	23 25	9,697	253,570	26 15	32
33	Stevens	124	4,160	33 55	5,203	41,797	8 03	3,086	45,413	14 72	3,710	74,137	19 98	4,990	128,323	25 31	33
34	Thurston	23	600	26 08	2,520	17,919	4 67	1,129	14,617	12 94	1,357	23,785	17 52	4,452	109,846	24 67	34
35	Wahkiakum	......	....	......	506	5,050	9 98	390	5,745	14 73	60	910	15 17	2,250	49,398	21 95	35
36	Walla Walla	4,199	232,750	55 43	2,708	27,915	10 31	1,669	27,975	16 76	2,671	56,538	21 17	3,106	93,420	30 08	36
37	Whatcom	31	990	31 93	3,862	23,268	7 32	2,488	30,640	12 31	1,765	26,938	15 26	15,050	354,472	23 55	37
38	Whitman	2,684	130,550	48 64	4,840	49,043	10 18	3,121	62,245	19 94	5,241	131,440	25 08	5,839	175,152	30 00	38
39	Yakima	639	31,600	49 45	11,591	120,300	10 38	7,045	133,790	18 99	4,532	113,670	25 08	11,169	358,640	32 11	39
	Average totals	18,669	$892,368	$47 80	110,159	$1,162,549	$10 55	67,666	$1,163,382	$17 19	73,438	$1,680,165	$22 88	185,780	$5,249,195	$28 25	

LIVESTOCK STATISTICS BY COUNTIES—Concluded.
(State Board of Equalization Report)
(1919)

		5			6			7			8	9			
	COUNTIES	BULLS FOR BREEDING PURPOSES			STOCK SHEEP AND GOATS			HOGS			POULTRY	DRAYS, TRUCKS, WAGONS AND SLEIGHS			
		No.	Value	Aver'ge Value	No.	Value	Aver'ge Value	No.	Value	Aver'ge Value	Value	No.	Value	Average Value	
1	Adams	97	$2,780	$28 66	20,078	$79,480	$3 96	3,868	$16,940	$4 38	$8,530	1,492	$21,735	$14 57	1
2	Asotin	115	3,610	31 40	17,675	87,638	4 96	2,548	14,637	5 75	3,823	558	18,850	33 78	2
3	Benton	82	2,845	34 70	107,131	467,015	4 36	2,641	17,380	6 58	10,096	1,119	15,745	14 07	3
4	Chelan	71	2,895	40 77	1,082	5,003	4 62	2,274	15,830	6 96	7,883	1,809	27,328	15 11	4
5	Clallam	101	2,599	25 73	1,281	6,406	5 00	1,247	8,067	6 47	4.321	458	6,455	14 09	5
6	Clarke	280	7,340	26 21	2,361	6,005	2 54	3,886	18,450	4 74	15,380	1,991	19,755	9 92	6
7	Columbia	100	3,010	30 10	18,578	72,925	3 92	2,053	10,470	5 10	....	968	16,450	16 99	7
8	Cowlitz	202	2,968	14 69	954	2,286	2 40	1,437	6,370	4 43	2,592	651	5,630	8 65	8
9	Douglas	91	2,154	23 67	3,154	12,568	3 98	2,547	18,806	7 38	12,202	2,560	42,908	16 76	9
10	Ferry	108	4,501	41 68	1,723	8,635	5 01	733	5,013	6 86	2.578	757	9,892	15 07	10
11	Franklin	22	752	34 20	47,880	241,853	5 05	1,577	8,487	5 38	4,395	651	9,830	15 10	11
12	Garfield	123	3,066	24 92	13,069	42,142	3 22	4,131	17,175	4 16	2,834	1,091	18,964	17 38	12
13	Grant	169	4,710	27 87	72,182	284,825	3 94	2,414	14,042	5 81	7,320	1,117	24,145	21 62	13
14	Grays Harbor	162	4,896	30 22	1,333	6,455	4 84	1,360	8,442	6 21	7,660	491	9,823	20 01	14
15	Island	58	1,307	22 53	1,874	7,135	3 81	600	4,583	7 64	6.577	233	2,828	12 14	15
16	Jefferson	88	4,031	45 80	236	1,182	5 01	610	3,594	5 89	2,534	267	4,724	17 69	16
17	King	526	263,000	500 00	1,432	7,037	4 91	4,601	32,050	6 97	57,864	6,530	233,080	35 69	17
18	Kitsap	38	1,085	28 55	364	1,658	4 55	1,015	4,860	4 79	15,255	670	5,075	7 58	18
19	Kittitas	267	8,910	33 37	48,907	223,585	4 57	2,703	20,830	7 70	440	1,680	40,405	24 05	19
20	Klickitat	182	6,019	35 07	53,027	254,657	4 80	7,032	38,877	5 53	6,980	1,196	23,847	19 94	20
21	Lewis	252	7,953	31 56	2,283	10,848	4 75	5,005	25,371	5 07	30.215	1,675	25,274	15 09	21
22	Lincoln	200	5,775	28 88	2,640	13,505	5 12	3,555	19,775	5 56	5,550	2,956	51,867	17 55	22
23	Mason	22	507	23 04	90	1,039	11 54	399	3,717	9 31	3,375	272	2,186	8 08	23
24	Okanogan	475	24,010	50 55	13,769	66,825	4 85	5,461	29,250	5 36	9,140	3,825	48,615	12 71	24
25	Pacific	161	3,625	22 52	261	900	3 45	718	5,258	7 32	2,021	635	9,479	14 93	25
26	Pend Oreille	40	1,255	31 87	261	1,230	4 71	382	2,663	6 97	2,165	960	12,430	12 95	26
27	Pierce	235	8,785	37 41	907	5,000	5 51	3,275	23,525	7 18	18,100	1,517	36,620	24 14	27
28	San Juan	50	962	19 23	6,324	25,270	3 99	555	4,680	8 43	2,410	333	3,896	11 70	28
29	Skagit	446	8,990	20 16	722	1,685	2 33	1,541	9,095	5 90	2,960	1,170	14,810	12 66	29
30	Skamania	16	337	21 10	440	1,835	4 17	79	620	7 85	505	97	1,198	12 35	30
31	Snohomish	588	16,750	28 48	313	1,385	4 42	2,653	15,200	5 72	23,960	1,882	24,630	13 08	31
32	Spokane	299	6,840	22 88	2,120	10,965	5 17	6,405	30,475	5 69	32,705	4,724	66,495	14 08	32
33	Stevens	225	5,512	24 50	6,662	22,073	3 31	4,104	16,457	4 01	9,565	....	32,393	....	33
34	Thurston	186	4,573	24 58	2,042	7,381	3 61	2,198	11,710	5 33	2,901	889	11,355	12 72	34
35	Wahkiakum	103	2,410	23 40	91	270	2 97	506	2,452	4 85	80	144	1,288	8 94	35
36	Walla Walla	174	6,292	36 16	33,110	153,726	4 64	5,467	31,464	5 75	8,823	3,211	52,990	16 50	36
37	Whatcom	432	8,726	20 20	1,638	6,580	4 02	1,566	8,164	5 21	49,036	2,015	19,148	9 50	37
38	Whitman	75	7,323	97 64	19,306	96,865	4 99	16,934	88,605	5 23	24,202	4,430	76,633	17 30	38
39	Yakima	481	17,130	35 61	134,739	609,920	4 52	18,776	124,780	6 64	40,496	5,581	102,980	18 46	39
	Average totals	7,342	$470,232	$64 06	642,129	$2,855,701	$4 48	128,851	$744,114	$5 78	$448,001	62,005	$1,151,755	$18 57	

The following list of active livestock organizations was obtained through the County Agricultural Agents of the State:

Name of Organization.	President.	Address	Secretary.	Address.	No. of members.	When meetings occur
Wash. State Holstein Breeders Assn.	F. S. Stimson	Seattle	R. L. Rutter, Jr.,	Ellensburg	....	....
Washington Guernsey Cattle Club	J. E. Wrage	Arlington	H. B. Douglas	Ferndale	....	Annually
Washington Wool Growers' Assn.	T. J. Drumheller,	Walla Walla	J. F. Sears	Prosser	....	....
Yakima Valley Livestock Assn.	E. B. Marks	Yakima	J. N. Price	Toppenish	....	....
Cowlitz County Guernsey Breeders Assn.	C. A. Bradt	Kalama	P. E. Todd	Kalama	....	....
Cowlitz County Cow Testing Assn	John Bogart	Woodland	G. H. Huntington,	Castle Rock	....	At Call
San Poil Livestock Assn.	Harry Yenter	Republic			....	....
Curlew Livestock Assn.			John P. Helphrey		....	....
Lonestar Milking Shorthorn Bull Club	Sam Misner				....	....
Poland China Pig Club	E. Raymond	Kahlotus			....	....
King County Dairy Assn.	J. C. Horrocks	Tolt			....	....
Kitsap County Holstein Breeders Assn.	S. Edwards	Port Orchard	A. E. Scholds	Silverdale	6	1st Mon. in Jan.
Lewis County Holstein-Freisian Club	V. L. Bevington	Chehalis, R2	E. A. Donaldson,	Chehalis, R1	....	....
Lewis County Pure Breeders Club	N. C. Sears	Winlock	Geo. R. Walker	Chehalis	....	....
Lewis County Jersey Cattle Breeders Assn.	N. C. Sorensen	Onalaska	G. P. Gleason	Chehalis, R1	....	....
Knob Hill Livestock Assn.			Walter Turner	Molson	....	....
Toroda Livestock Assn.			P. F. Livingston	Toroda	....	....
Anglin Livestock Association	T. S. Anglin	Anglin			....	....
Aeneas Livestock Association			C. Chamberlain	Aeneas	....	....
Tonasket Livestock Association			Ross Brattain	Tonasket	....	....
Wauconda Livestock Association			Joseph Gregory	Wauconda	....	....
Brewster Cattle and Horse Association	Wm. Peckham	Brewster	Chester Tupper	Pateros	....	....
Chiliwist Association	J. N. Moore	Olema	U. E. Fries	Brewster	....	....
Conconully Association	J. M. Meyers	Conconully	Andrew Refsing	Riverside	....	....
Ellemehan Association	A. N. Johnston	Oroville	Otto Hershberger	Oroville	....	....
Loomis Association	R. C. Bernard	Nighthawk	W. J. Forde	Loomis	....	....
Loup Loup Association	F. P. Boan	Okanogan	W. F. Fletcher	Okanogan	....	....
Lower Methow Association	Lloyd Williams	Methow	Chas. F. Pasley	Methow	....	....
Methow Valley Association	Thos. Jones	Winthrop	T. J. Prewitt	Winthrop	....	....
Pine Creek Cattle and Horse Association	W. J. Utt	Riverside	S. Burden	Tonasket	....	....
Twisp Cattle and Horse Association	B. J. Batie	Twisp	Geo. Gibson	Twisp	....	....
Enterprise Bull Association	W. H. Mowan	Tonasket			....	....
Pend Oreille Co. Livestock Producers Ann.	P. R. Tulles	Newport, R1	A. E. Houchins	Newport, R1	60	Quarterly
Pierce County Dairymen's Association	O. R. McKinney	Tacoma	L. M. Hatch	Tacoma	....	....
Guernsey Cattle Club of Gig Harbor	H. H. Benson	Gig Harbor	J. Vernhardson	Gig Harbor	....	....
Snohomish County Dairy Association	W. G. Grimm	Arlington, R1	Miss Doran	Everett	....	....
Snohomish County Guernsey Breeders Assn.	J. E. Wrage	Arlington	Elmer Lenfest	Snohomish	....	Annually
Snohomish County Holstein Breeders Assn.	Ed. Hoem	Snohomish	A. B. Winter	Everett	....	....
Snohomish County Jersey Club	W. G. Grimm	Arlington	H. Coy	Marysville	....	....
The Stillaguamish Valley Cow Test. Assn.	H. Thompson	Arlington	J. E. Wrage	Arlington	....	Annually
Snohomish Valley Cow Testing Assn.	N. J. Bishop	Snohomish	E. M. Bailey	Snohomish	....	Annually

Name of Organization.	President.	Address.	Secretary.	Address.	No. of members	When meetings occur
Stevens County Livestock Association	T. C. Bell	Gelville	L. H. Rothlisburger,	Colville	....	....
Stevens County Jersey Cattle Club	....				....	....
Wahkiakum Cow Testing Association	H. L. Wiester	Skamokawa	F A. Durrah	Grays River	27	....
Wahkiakum Jersey Cattle Club	Geo. A. Nelson	Grays River	H. L. Wiester	Skamokawa	39	Annually
Walla Walla Pure Bred Jersey Bull Assn.	C. C. Christenson	College Pl.	R. E. Bean	Freewater, Ore.	....	Annually
Purebred Breeders' Association	W. G. Cordiner	Walla Walla	A. W. Kasten	Walla Walla	....	At Call
Whatcom Co. Holstein Cattle Club	H. J. Evans	Ferndale	F. C. Johnson	Ferndale	48	Quarterly
Whatcom Co. Jersey Cattle Breeders Club	A. N. Swenson	Lynden	R. I. Tanner	Sumas	45	Bi-Monthly
Whatcom Co. Guernsey Cattle Breed. Club	H. B. Douglas	Ferndale	B. C. VanderGriend	Lynden	40	Annually
Whatcom Co. Cow Testing Association	Henry Shagren	Lynden	C. M. VanderGriend	Lynden	34	Annually
Whatcom Co. Poland China Swine Breeders Assn.	Burton Flint	Blaine	S. S. Mullin	Bellingham	4	Annually
Whitman Co. Purebred Livestock Breeders Assn.	J. H. McCroskey	Garfield	C. A. Lodge	Colfax	31	....
Whitman Co. Duroc-Jersey Breeders Assn.	G. O. Swales	Johnsons	Frank Bush	Johnsons	14	....
Whitman & Latah (Idaho) Shorthorn Breeders Assn.	C. A. Greif	Uniontown	H. Hackadorn	Pullman	....	....
Yakima Valley Guernsey Breeders Assn.	H. E. Angel	Mabton	R. N. West	Yakima, R7	....	....
Yakima Valley Holstein Association	C. G. Sprong	Grandview	S. V. Butchart	Sunnyside	....	....
Yakima Valley Livestock Association	....		J. N. Price	Yakima	....	....
Yakima Valley Duroc-Jersey Breeders Assn.	S. D. Cornell	Grandview			....	....

ESTIMATED NUMBER OF CATTLE, SHEEP, HORSES, MULES, MILCH COWS, AND SWINE.

Taken from the Monthly Crop Reports of the United States Department of Agriculture

	1917	1918	1919	1920
WASHINGTON—				
Cattle	280,000	320,000	307,000	298,000
Sheep	585,000	661,000	780,000	757,000
Horses	300,000	300,000	303,000	303,000
Mules	20,000	20,000	19,000	19,000
Milk cows	263,000	240,000	228,000	228,000
Swine	283,000	283,000	317,000	292,000
UNITED STATES—				
Cattle	41,689,000	44,112,000	45,085,000	44,485,000
Sheep	47,616,000	48,603,000	48,866,000	48,615,000
Horses	21,109,000	21,482,000	21,555,000	21,210,000
Mules	4,995,000	4,954,000	4,873,000	4,723,000
Milk cows	22,894,000	23,310,000	23,475,000	23,747,000
Swine	67,503,000	70,978,000	74,584,000	72,909,000

BREEDS OF LIVE STOCK—WASHINGTON AND UNITED STATES

The following estimates of relative numbers of different breeds of livestock in Washington and in the United States are based upon estimates of livestock reporters of the Bureau of Crop Estimates.

Cattle	Wash. P. C.	U. S. P. C.
Holstein	29.0	16.2
Jersey	27.1	14.0
Short Horn (Durham)	16.7	22.6
Guernsey	7.7	2.9
Hereford	5.0	21.0
Ayrshire	1.4	.6
Red Polled	.4	2.6
Brown Swiss	.4	.3
Polled Durham	.3	1.5
Aberdeen Angus	.2	3.6
Galloway	—	.8
Devon	—	.3
Dutch Belted	—	.2
Other	3.3	3.1
Nondescript	8.5	10.3

Hogs	Wash. P. C.	U. S. P. C.
Durco Jersey	31.2	34.2
Poland China	22.4	27.9
Chester White	20.2	10.7
Berkshire	14.2	9.2
Hampshire	1.5	3.9
Cheshire	.7	.3
Tamworth	.3	.7
Razorback	.2	4.2
Yorkshire	—	.6
Other	2.9	2.7
Nondescript	6.4	5.6

Sheep	Wash. P. C.	U. S. P. C.
Rambouillet	24.7	13.3
Lincoln	21.3	3.8
Merino	15.3	25.4
Shropshire	13.8	23.2
Hampshire	9.2	6.1
Oxforddown	2.8	1.9
Cotswold	2.3	7.2
Dorset	.4	.7
Southdown	1.8	6.1
Cheviot	.1	.3
Leister	—	.3
Tunis	—	.1
Other	2.8	3.5
Nondescript	5.5	8.1

ESTIMATED VALUE ON FARMS JANUARY 1, 1917-1920, OF CATTLE, HORSES, MULES, MILK COWS, HOGS AND SHEEP.

Monthly Crop Reports, United States Department of Agriculture.

WASHINGTON

	VALUE PER HEAD JANUARY 1								TOTAL VALUE JANUARY 1			
	1920				All Ages				1920	1919	1918	1917
		Under 1 Year	1 Year Under 2	Over 2 Years	1920	1919	1918	1917				
Cattle		$24 00	$42 00	$67 00	$43 80	$37 60	$36 00	$30 40	$13,052,000	$11,543,000	$11,520,000	$8,512,000
Horses		37 00	64 00	103 00	92 00	92 00	108 00	98 00	27,876,000	27,876,000	32,400,000	29,400,000
Mules		48 00	78 00	123 00	106 00	108 00	117 00	111 00	2,120,000	2,160,000	2,223,000	2,109,000
Milk Cows					88 00	75 00	70 00	59 50	20,064,000	17,100,000	16,800,000	15,648,000
Hogs					23 30	22 00	20 00	11 10	6,804,000	6,974,000	5,060,000	3,141,000
	Lambs	Ewes 1 Yr. and Over	Wethers 1 Yr. and Over	Rams								
Sheep	$8 70	$11 30	$11 20	$23 00	11 00	11 80	11 40	7 10	8,827,000	9,204,000	7,535,000	4,154,000
Total value all livestock									$78,243,000	$74,857,000	$76,138,000	$62,964,000

ESTIMATED VALUE OF LIVESTOCK—Concluded.

UNITED STATES

	VALUE PER HEAD JANUARY 1								TOTAL VALUE JANUARY 1			
	1920				All Ages							
		Under 1 Year	1 Year Under 2	Over 2 Years	1920	1919	1918	1917	1920	1919	1918	1917
Cattle	....	$24 41	$40 99	$59 01	$48 15	$44 22	$40 88	$35 92	$1,919,455,000	$1,993,445,000	$1,803,482,000	$1,497,621,000
Horses	....	39 00	61 39	104 04	94 39	98 45	104 24	102 89	1,992,542,000	2,114,897,000	2,246,970,000	2,182,307,000
Mules	....	60 52	91 92	160 52	147 10	135 83	128 81	118 15	734,779,000	672,922,000	627,679,000	558,006,000
Milk Cows	....	....	....	....	85 18	78 20	70 54	59 63	2,021,681,000	1,835,770,000	1,644,231,000	1,365,251,000
Hogs	....	....	....	....	19 01	22 02	19 54	11 75	1,386,212,000	1,642,598,000	1,397,261,000	792,898,000
	Lambs	Ewes 1 Yr. and Over	Wethers 1 Yr. and Over	Rams								
Sheep	$8 09	$11 10	$9 81	$21 52	10 52	11 63	11 82	7 13	511,654,000	568,265,000	574,575,000	339,529,000
Total value all livestock	....	....	....	....	....	....	....	....	$8,566,323,000	$8,827,897,000	$8,294,198,000	$6,735,612,000

Monthly Prices of Horses.

The following table gives the United States estimated average price per head to producers of horses, monthly, for seven years, 1913-1919:

DATE	1919	1918	1917	1916	1915	1914	1913	Av'ge
Jan. 15	$120	$130	$129	$128	$130	$137	$140	$131
Feb. 15	121	133	131	129	132	139	146	133
Mar. 15	124	137	133	131	132	138	146	134
Apr. 15	127	137	136	133	132	138	148	136
May 15	129	136	138	134	133	139	145	136
June 15	127	135	137	132	132	136	146	135
July 15	127	132	135	133	134	137	143	134
Aug. 15	125	131	132	131	131	135	141	132
Sept. 15	119	128	132	131	131	132	141	131
Oct. 15	114	126	130	130	129	131	138	128
Nov. 15	113	122	129	129	127	130	136	127
Dec. 15	113	121	129	129	126	130	135	126
Average	$122	$131	$133	$131	$131	$135	$142	$132

Monthly Prices of Beef Cattle.

The following table gives the United States estimated average price per 100 pounds to producers of beef cattle, monthly, for seven years, 1913-1919:

DATE	1919	1918	1917	1916	1915	1914	1913	Av'ge
Jan. 15.	$9 65	$8 33	$6 86	$5 85	$5 99	$6 04	$5 40	$6 87
Feb. 15	10 02	8 55	7 36	5 99	5 93	6 16	5 55	7 08
Mar. 15	10 34	8 85	7 91	6 37	5 92	6 28	5 88	7 36
Apr. 15	10 81	9 73	8 57	6 66	5 96	6 29	6 08	7 73
May 15	10 84	10 38	8 70	6 73	6 13	6 33	6 01	7 87
June 15	10 20	10 40	8 65	6 91	6 20	6 32	6 02	7 81
July 15	9 96	10 07	8 30	6 78	6 07	6 38	5 98	7 65
Aug. 15	9 82	9 71	8 17	6 51	6 18	6 47	5 91	7 54
Sept. 15	9 02	9 63	8 40	6 55	6 06	6 38	5 92	7 42
Oct. 15	8 65	9 33	8 35	6 37	6 04	6 23	6 05	7 29
Nov. 15	8 65	9 14	8 21	6 44	5 85	6 02	5 99	7 19
Dec. 15	8 63	9 28	8 24	6 56	5 75	6 01	5 96	7 20
Average	$9 72	$9 45	$8 14	$6 48	$6 01	$6 24	$5 90	$7 42

Monthly Prices of Milk Cows.

The following table gives the United States estimated average price per head to producers of milk cows, monthly, for seven years, 1913-1919:

DATE	1919	1918	1917	1916	1915	1914	1913	Av'ge
Jan. 15.	$86 10	$76 54	$63 92	$57 79	$58 47	$57 99	$49 51	$64 33
Feb. 15	86 15	78 36	65 93	57 99	57 99	59 09	51 42	65 28
Mar. 15	88 15	80 71	68 46	59 51	58 00	59 23	54 02	66 87
Apr. 15	90 91	82 45	72 09	60 68	57 78	59 60	55 34	68 41
May 15	93 43	84 11	72 78	60 98	58 29	59 85	54 80	69 18
June 15	93 84	84 74	72 87	61 63	58 59	59 82	55 20	69 53
July 15	94 51	84 97	72 81	62 04	60 31	59 67	54 80	69 87
Aug. 15	94 72	84 06	72 53	61 32	58 34	60 72	54 78	69 50
Sept. 15	93 42	85 21	73 93	61 41	58 38	59 58	55 78	69 67
Oct. 15	93 43	85 41	75 79	62 19	58 76	59 53	56 47	70 23
Nov. 15	93 27	84 51	75 00	62 67	57 35	58 77	57 71	69 90
Dec. 15	95 54	85 78	76 16	63 18	56 79	58 23	57 19	70 41
Average	$91 95	$82 56	$71 86	$60 95	$58 25	$59 34	$54 75	$68 52

Monthly Prices of Hogs.

The following table gives the United States estimated average price per 100 pounds to producers of hogs, monthly, for seven years, 1913-1919:

DATE	1919	1918	1917	1916	1915	1914	1913	Av'ge
Jan. 15	$15 69	$15 26	$9 16	$6 32	$6 57	$7 45	$6 77	$9 60
Feb. 15	15 53	15 03	10 33	7 07	6 34	7 75	7 17	9 89
Mar. 15	16 13	15 58	12 32	7 86	6 33	7 80	7 62	10 52
Apr. 15	17 39	15 76	13 61	8 21	6 48	7 80	7 94	11 03
May 15	18 00	15 84	13 72	8 87	6 77	7 60	7 45	11 11
June 15	17 80	15 37	13 50	8 21	6 80	7 43	7 61	10 96
July 15	19 22	15 58	13 35	8 40	6 84	7 72	7 81	11 27
Aug. 15	19 30	16 89	14 24	8 61	6 61	8 11	7 79	11 65
Sept. 15	15 81	17 50	15 69	9 22	6 79	8 11	7 68	11 54
Oct. 15	13 88	16 50	16 15	8 67	7 18	7 43	7 60	11 06
Nov. 15	13 36	15 92	15 31	8 74	6 35	7 00	7 33	10 57
Dec. 15	12 66	15 82	15 73	8 76	6 02	7 67	7 16	10 55
Average	$16 23	$15 92	$13 59	$8 20	$6 59	$7 57	$7 49	$10 80

Monthly Prices of Sheep.

The following table gives the United States estimated average price per 100 pounds to producers of sheep, monthly, for seven years, 1913-1919:

DATE	1919	1918	1917	1916	1915	1914	1913	Av'ge
Jan. 15	$9 68	$10 55	$7 33	$5 52	$4 95	$4 67	$4 35	$6 72
Feb. 15	9 95	10 75	8 17	5 90	5 14	4 67	4 63	7 03
Mar .15	10 45	11 41	9 21	6 35	5 36	4 77	4 97	7 50
Apr. 15	11 33	11 98	9 69	6 61	5 60	4 96	5 16	7 90
May 15	10 93	12 32	10 15	6 66	5 54	4 87	4 91	7 92
June 15	10 34	11 56	9 84	6 54	5 43	4 70	4 84	7 61
July 15	9 25	11 04	9 32	6 33	5 35	4 75	4 20	7 18
Aug. 15	9 06	10 99	9 33	6 22	5 16	4 87	4 32	7 14
Sept. 15	8 69	10 79	10 05	6 25	5 06	4 80	4 23	7 12
Oct. 15	8 16	10 35	10 24	6 20	5 18	4 81	4 16	7 06
Nov. 15	8 35	10 11	10 20	6 41	5 18	4 68	4 27	7 03
Dec. 15	8 53	9 46	10 44	6 77	5 38	4 95	4 46	7 14
Average	$9 58	$10 94	$9 50	$6 31	$5 28	$4 79	$4 54	$7 28

Monthly Prices of Wool.

The following table gives the United States estimated average price per pound to producers of unwashed wool, monthly, for seven years, 1913-1919:

DATE	1919	1918	1917	1916	1915	1914	1913	Av'ge
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
Jan. 15	55.2	58.1	31.8	23.3	18.6	15.7	18.6	31.6
Feb. 15	51.1	57.1	32.7	24.2	20.2	15.7	18.7	31.4
Mar. 15	51.3	60.0	36.7	25.9	22.8	16.4	18.4	33.1
Apr. 15	47.9	60.0	38.8	26.3	22.7	16.8	17.7	32.9
May 15	48.0	58.2	43.7	28.0	22.0	17.2	16.3	33.3
June 15	50.5	57.4	49.8	28.7	23.7	18.4	15.6	34.9
July 15	51.8	57.5	54.3	28.6	24.2	18.5	15.9	35.8
Aug. 15	52.2	57.4	54.8	29.0	23.8	18.7	15.8	36.0
Sept. 15	51.3	57.7	54.2	28.4	23.3	18.6	15.8	35.6
Oct. 15	50.6	57.7	55.5	28.7	22.7	18.0	15.5	35.5
Nov. 15	51.0	56.4	55.9	29.4	22.7	18.1	15.6	35.6
Dec. 15	51.6	56.2	58.2	30.8	23.3	18.6	16.1	36.4
Average	51.0	58.0	47.2	27.6	22.5	17.6	16.7	34.4

STALLION REGISTRATION

The laws relating to the registration of stallions and jacks was amended at the 1917 session of the legislature and became effective June 8, 1917. Provisions were made in this enactment to limit the fees that should be charged by the examining veterinarian for the inspection of stallions for soundness, and provided that they should have the endorsement of the commissioner of agriculture before undertaking this work. It was also provided that all jacks and stallions used for public service should be licensed. Previous to this law becoming effective, all licenses were issued for a period of two years, dating from the date of issuance. The present law, however, provides that all licenses shall expire on December 31st of the year following the year in which the license was issued. This will be of much assistance in checking the renewals.

The enforcement of this act resting, as it does, on the commissioner of agriculture, has frequently brought about much correspondence on the subject. If district veterinary inspectors of the department were appointed, there is reason to believe that a more careful surveillance over stallions used in public service could be had.

Following will be found a list of registry associations, and it will be found that we have included two jack associations for the reason that the standards of both are about the same. Neither association has been recognized by the National Society of Record Associations for the reason that their standards do not meet the requirements of the national association. Height, color and measurements appear to be the only requirements necessary for registration in the jack associations, whereas breeding is of first importance in the stallion registry associations recognized by this department.

Registry Associations.

Recognized as standard by the Washington Department of Agriculture:

American Trotter	American Trotting Register	American Trotting Register Association, 137 South Ashland Boulevard, Chicago, Ill.
Arabian	Stud Book of the Arabian Horse Club of America	Arabian Horse Club of America; H. K. Bush-Brown, secretary, Newburgh, N. Y.
Belgian Draft	American Register of Belgian Draft Horses	American Association of Importers and Breeders of Belgian Draft Horses; J. D. Conner, Jr., secretary, Wabash, Ind.
Cleveland Bay	American Cleveland Bay Stud Book	Cleveland Bay Society of America; R. P. Stericker, secretary, 4035 Sheridan Road, Chicago, Ill.
Clydesdale	American Clydesdale Stud Book	American Clydesdale Association; P. E. Fleming, secretary, U. S. Yards, Chicago, Ill.
French Coach	French Coach Stud Book	French Coach Horse Society of America; Duncan E. Willett, secretary, Maple avenue and Harrison street, Oak Park, Ill.
French Draft	National Register of French Draft Horses	National French Draft Horse Association of America; C. E. Stubbs, secretary, Fairfield, Ia.
German Coach, Oldenburg	German, Hanoverian and Oldenburg Coach Horse Stud Book	German, Hanoverian and Oldenburg Coach Horse Association of America; J. Crouch, secretary, Lafayette, Ind.
Hackney	American Hackney Stud Book	American Hackney Horse Society; Gurney C. Gue, secretary, 460 Fulton avenue, Hempstead, L. I., N. Y.
Jacks and Jennets	American Jack Stock Stud Book	American Breeders' Association of Jacks and Jennets; J. M. Jones, secretary, Columbia, Tenn.
Jacks and Jennets	Standard Jack and Jennet Registry of America	Standard Jack and Jennet Registry Association; Wm. E. Morton, secretary, Kansas City, Mo.

Morgan	American Morgan Register	American Morgan Register Association; T. E. Boyce, secretary, Middlebury, Vt.
Percheron	Percheron Stud Book of America	Percheron Society of America; Wayne Dinsmore, secretary, U. S. Yards, Chicago, Ill.
Percheron	The American Breeders' and Importers' Percheron Registry	The American Breeders' and Importers' Percheron Registry Co.; John A. Forney, secretary, Plainfield, Ohio.
Saddle Horse	American Saddle Horse Register	American Saddle Horse Breeders' Association; R. H. Lillard, secretary, Louisville, Ky.
Shetland Pony	American Shetland Pony Club Stud Book	American Shetland Pony Club; Miss Julia M. Wade, secretary, Lafayette, Ind.
Shire	American Shire Horse Stud Book	American Shire Horse Association: W. G. Lynch, secretary, Tonica, Ill.
Suffolk	American Suffolk Horse Stud Book	American Suffold Horse Association; R. P. Stericker, secretary, 4035 Sheridan Road, Chicago, Ill.
Thoroughbred	American Stud Book	The Jockey Club; W. H. Rowe, Register, 18 East 41st street, New York, N. Y.
Welsh Pony and Cob	Welsh Pony and Cob Stud Book	The Welsh Pony and Cob Society of America; Miss Julia M. Wade, secretary, Lafayette, Ind.

Foreign Associations.

Recognized as standard by the Washington Department of Agriculture:

Societe le Cheval de Trait Belge; Chevalier G. H Hynderick, secretary, Brussels, Belgium. Stud Book des Chevaux de Trait Belges.

Clydesdale Horse Society of the United Kingdom of Great Britain and Ireland; Archibald MacNeilage, secretary, 93 Hope street, Glasgow, Scotland. Clydesdale Stud Book.

Societe des Agriculteurs de France; Henri Johanet, secretary, 8 Rue d'Athens, France. Stud Book des Chevaux de Trait, Francais.

Hackney Horse Society; Frank F. Euren, secretary, 12 Hanover Square, London, W., England. Hackney Stud Book.

La Societe Hippique Percheronne de France; E. Lemaire, secretary, Nogent-le-Rotrou, France. Stud Percheron de France.

Shetland Pony Stud Book Society; R. W. Walker, secretary, 3 Golden Square, Aberdeen, Scotland. Shetland Pony Stud Book.

Shire Horse Society; J. Sloughgrove, secretary, 12 Hanover Square, London, W., England. Shire Horse Society Stud Book.

Suffolk Horse Society; Fred Smith, secretary, Rendlesham, Woodbridge, Suffolk, England. Suffolk Stud Book.

Australian Stud Book; W. C. Yuille & Sons, Melbourne, Australia. Australian Thoroughbred Stud Book.

General Stud Book: Weatherby & Sons, 6 Old Burlington street, London, W., England.

The Welsh Pony and Cob Society; John P. Bache, secretary, Knighton, Radnorshire, Wales. Welsh Pony and Cob Stud Book.

Canadian National Records; Secretary, Ottawa, Canada.

Not recognized as standard by the Washington Department of Agriculture:

American Horse Breeders' Trotting Registry Association, 161 High street, Boston, Mass.

American Horse Registry Association; N. J. Harris, secretary, Des Moines, Ia.

American Iceland Pony Club; George H. Simpson, secretary, Wheaton, Ill.

American Percheron Registry Association; S. H. Heberling, secretary, La Grange, Ill.

Belgian-American Draft Horse Registry; A. J. Myers, secretary, Lovington, Ill.

Coach and Draft Horse Association of America; Frederick Wrightman, secretary, La Crosse, Wis.

Hartman Stock Farm Registry Record Company; Adam Kramm, secretary, Columbus, Ohio.

International Consolidated Record Association; H. A. Jones, secretary, Pen Yan, N. Y.

Morrison's International Roadster Register, Des, Moines, Iowa.

National Percheron Horse Breeders' Association; W. E. Phillips, secretary. (Address unknown.)

National Hackney Stud Book; N. A. Randall, secretary, Crawfordsville, Ind.

The American Jack Register; W. L. DeClow, secretary, Cedar Rapids, Iowa.

The National Standard Pacing and Trotting Horse Breeders' Association; Thos. C. Parsons, registrar, Cleveland, Ohio.

United States Horse Register; J. E. Ragsdale, secretary, Gibson City, Ill.

Wagon Horse Association of America; W. B. Carpenter, president, Kansas City, Mo.

Following is a list of counties showing the number and breed of stallions that are duly licensed to be used in public service:

COUNTIES	STALLIONS												JACKS		TOTALS		
	Percheron	Belgian	Shire	Clydesdale	French Draft	French Coach	Morgan	Thoroughbred	Standard	German Coach	Kentucky Saddle	Grade Stallions	Pure Bred Jacks	Grade Jacks	Total Pure Bred	Total Grade	Grand Total
Adams	12	4	1	1									5		23		23
Asotin	1			2								1			3	1	4
Benton	17		1	1		1						3	1	2	21	5	26
Chelan	1							1				13		1	2	14	16
Clallam	1														1		1
Clarke	5		1									3	1	1	7	4	11
Columbia	1	2	1								1	2	2	1	7	3	10
Cowlitz	1	1							1						3		3
Douglas	7	4	6	1	2	1						13	2	6	23	19	42
Ferry	4			1	1							2	1	1	7	3	10
Franklin	3		1									2	1	4	5	6	11
Garfield	5	1		2	1				1			1	9	7	19	8	27
Grant	8	3	4	4	2							12		1	21	13	34
Grays Harbor		1													1		1
King	2			1								1			3	1	4
Kittitas	6		1	2	1							3	2		12	3	15
Klickitat	5	2	1	1	1							4	3		13	4	17
Lewis	1	2										3	1		4	3	7
Lincoln	14	6	9	4								12	16	8	49	20	69
Mason		1													1		1
Okanogan	7	2	5		1					1		19	1	7	17	26	43
Pend Oreille												1				1	1
Pierce		1										1			1	1	2
Skagit		1										2			1	2	3
Snohomish	2			2						1		3			5	3	8
Spokane	12	4	7	1	1							5	47	1	72	6	78
Stevens	4	1										6			5	6	11
Thurston	1		1									2			2	2	4
Walla Walla	9		2									3	11	12	22	15	37
Whatcom	1														1		1
Whitman	32	8	33	15	2							12	14	9	104	21	125
Yakima	15	1	4	3	1		1		1			7		4	26	11	37
Out of State	3		1				1					3			5	3	8
Totals	148	41	79	41	12	2	2	1	3	2	1	139	112	65	486	204	690

Number of Stallions and Jacks Licensed in State Since Enactment of Stallion Registration Law.

YEAR REPORT PUBLISHED	STALLIONS		JACKS	
	Pure Bred	Not Pure Bred	Pure Bred	Not Pure Bred
1913	430	307	7	67
1914	584	534	18	83
1916	506	423	20	71
1918	478	276	56	47
1920	332	139	112	65

LAW RELATING TO THE REGISTRATION OF STALLIONS AND JACKS.

Be it enacted by the Legislature of the State of Washington:

Section 1. Every person, firm or corporation owning any stallion, or jack, for sale, exchange or for public service in this state, shall cause the name, description and pedigree, as far as may be known of such stallion or jack, to be enrolled by the department of agriculture of the State of Washington, and procure a certificate of such enrollment from said department, which shall thereupon be presented to and recorded by the auditor of the county in which said stallion or jack is used for public service.

In order to obtain the license certificate herein provided for, the owner of each stallion or jack shall obtain a certificate of soundness, signed by a veterinarian registered to practice in the State of Washington and authorized to issue such certificate by the commissioner of agriculture, for which certificate the veterinarian shall be entitled to charge a fee of not to exceed five dollars ($5.00) and his actual and necessary traveling expenses in going to and returning from the place where such examination is made, and shall forward the veterinarian's certificate, together with the stud book certificate of registry of the pedigree of the said stallion or jack, and other necessary papers relating to his breeding and ownership to the department of agriculture.

The presence of any of the following named diseases shall disqualify a stallion or jack for public service: bone spavin, ringbone, sidebone, navicular disease, bog spavin, curb with curby formation of hock, glanders, farcy, maladies due coit, urethal gleet, mange, or melanosis; and the department of agriculture is hereby authorized to refuse its certificate of enrollment to any stallion or jack affected with any of the diseases here specified and to revoke the previously issued enrollment certificate of any stallion or jack found, on investigation by the department, to be so affected. (Laws 1917, Chapter 112.)

Section 2. The commissioner of agriculture shall examine and pass upon the merits of each pedigree submitted, and shall use as his standard for action the stud books and signatures of the duly authorized officers of the various horse or jack registry associations, societies or companies recognized by the department of agriculture of this state, and shall accept as pure-bred and entitled to a license certificate as such, each stallion or jack for which a pedigree registry certificate is furnished bearing the signature of the duly authorized officers of a recognized and approved stud book. (Laws 1917, Chapter 112.)

Posting Copy of License.

Section 3. The owner of any stallion or jack used for public service in this state shall post and keep affixed, during the entire breeding seasons, copies of the license certificate of such stallion or jack, issued under the provisions of the next succeeding section, in a conspicuous place, both within and upon the outside of every stable or building where the said stallion or jack is used for public service, at his home or elsewhere. (Sec. 3, Laws 1911, page 484.)

Section 4, Subdivision 1. The license certificate issued for a stallion or jack whose sire and dam are of pure breeding and the pedigree of which is registered in a stud book recognized by the department of agriculture, shall be in the following form:

The department of agriculture of the State of Washington. Certificate of purebred stallion or jack No....................

The pedigree of the stallion or jack (name).........................

Owned by ....

Described as follows:

(Color) .... (Breed) ....

Foaled in the year........, has been examined and it is hereby certified that the said stallion or jack is of pure breeding and is registered in a stud book recognized by the department of agriculture of the State of Washington.

(Signature) ....

Commissioner of Agriculture.

Subdivision 2. The license certificate issued for a stallion or jack whose sire or dam is not of pure breeding shall be in the following form:

Department of agriculture of the State of Washington: Certificate of grade stallion or jack No...............

The pedigree as far as may be known of the stallion or jack (name)....

Owned by ....

Described as follows:

(Color)...................

Foaled in the year........, has been examined and it is found that the said stallion or jack is not of pure breeding and is therefore, not eligible for registration in any stud book recognized by the department of agriculture of the State of Washington.

(Signature)..............................

Commissioner of Agriculture.

Subdivision 3. The license certificate issued for a stallion whose sire and dam are pure-bred, but not of the same breed, shall be in the following form:

Department of agriculture of the State of Washington: Certificate of cross-bred stallion No.....................

The pedigree of the stallion (name).............................

Owned by ....

Described as follows:

(Color)..................

Foaled in the year..........., has been examined and it is found that his sire is registered in the..............and his dam in................

Such being the case, the said stallion is not eligible for registration in any stud book recognized by the department of agriculture of the State of Washington.

(Signature)..............................

Commissioner of Agriculture.

Subdivision 4. The license certificate issued for a non-standard-bred stallion shall be in the following form:

Department of agriculture of the State of Washington. Certificate of non-standard-bred stallion No...................

The pedigree so far as may be known of the stallion (name).........

Owned by ....

Described as follows:

(Color)...............

Foaled in the year........., has been examined and it is found that the stallion is not eligible to registration as standard-bred, and for the purpose of the license is not pure-bred, although recorded in a non-standard department of the American Trotting Register.

(Signature)..............................

Commissioner of Agriculture.

(Laws 1917, Chapter 112.)

Section 5. Each bill and poster issued by the owner of any stallion or jack enrolled under this act, or used by him or his agent for advertising, shall have such stallion's or jack's certificate of enrollment printed in bold-face type, not smaller than long primer, on said bill or poster, and the first mention thereon of the name of the stallion or jack shall be preceded by the words: "Pure-bred," "grade," "cross-bred," or "non-standard-bred," in accordance with the wording of the certificate of enrollment; and it shall be illegal to print upon the poster any misleading reference to the breeding of the stallion or jack, his sire or his dam, or to use upon such bill or poster a portrait of a stallion or jack in a misleading way; and each newspaper advertisement printed to advertise any stallion or jack for public service shall show the enrollment certificate number and state whether it reads "pure-bred," "grade," "cross-bred," or "non-standard-bred."

A fee of two dollars ($2.00) shall be paid to the department of agriculture for the examination and enrollment of each pedigree and for the issuance of a license certificate, in accordance with the breeding for the stallion or jack as above provided.

A renewal of each license certificate issued under the provisions of this act shall be obtained from the commissioner of agriculture on the thirty-first day of December of the year following the year in which such certificate was issued and every two years thereafter, by filing with the commissioner of agriculture a new certificate of soundness, issued within thirty days prior to the application for such renewal by an authorized veterinarian, and the payment of a fee of one dollar ($1.00).

Upon the transfer of the ownership of any stallion or jack enrolled under the provisions of this act, the certificate of enrollment may be transferred to the transferee by said department upon submittal of satisfactory proof of such transfer and upon payment of the fee of fifty cents (50c); and a fee of fifty cents (50c) shall be charged for a duplicate license certificate issued where proof is given of loss or destruction of the original certificate. (Laws 1917, Chapter 112.)

Necessity of Certificate.

Section 5½. Any person, firm or corporation bringing any stallion or jack into the state shall, within sixty days thereafter, procure the license certificate provided for in section 1.

Any person, firm or corporation offering any stallion or jack for sale for breeding purposes shall first procure the license certificate provided for in section 1. (Sec. 5½, Laws 1911, page 487.)

Violation and Penalty.

Section 6. Any person, firm, or corporation violating any of the provisions of this act shall be guilty of a misdemeanor, and upon conviction thereof be fined in any sum not exceeding fifty dollars, and for each and every subsequent violation of the provisions of this act shall be guilty of a misdemeanor and subject to a fine of not less than fifty dollars. (Sec. 6, Laws 1911, page 487.)

Complaint and Decision.

Section 7. When a complaint is made to the department of animal husbandry that a stallion or jack is unsound, and, on investigation, an examination is by the department deemed necessary, such examination shall be made by the state veterinarian, or his deputy; but the owner of the stallion or jack shall have the right to select some registered veterinarian to act with the state veterinarian, and in case these two fail to agree they shall appoint a third registered veterinarian to act as referee, and his decision shall be final. (Sec. 7, Laws 1911, page 487.)

Effective, as amended, June 8, 1917.

LIVESTOCK DISEASES.

The diseases affecting livestock are many and of much importance to the public at large, both from the standpoint of health of man and the commercial value of the animals. Several of the diseases affecting livestock, likewise affect man, and in some cases, with even graver results. The day of the open range is fast fading away and instead of countless numbers of beef cattle feeding at large over vast areas of land, it now befalls the farmer to feed and keep them within the bounds of his farm and in proportion to it. This more or less close confinement is somewhat inducive to the spreading of any disease that might get started among the cattle, and it is for that reason the Department of Agriculture and all other departments and organizations interested in the work, are advocating and putting forth measures for the prevention and suppression of disease.

Probably the outstanding work of this division is the work done on the eradication of tuberculosis from the herds of the state. Occasionally there are outbreaks of contagious and infectious diseases which have a more or less obscure origin, and to make a positive diagnosis it is often necessary to go farther than a clinical examination. For the laboratory work done in connection with this work, it has usually been necessary to call upon the State College at Pullman, who have been very generous in their support, and for which this department is exceedingly grateful. Due to the vacation period at the college and other contingencies that arise, it has been, at times, very inconvenient for them to attend to some of the work that they have been asked to do; moreover, their equipment for making certain examinations is somewhat limited and necessarily offers a serious handicap.

It would appear that a properly and fully equipped laboratory should be in connection with this department, so that all laboratory examinations could be promptly made. Under the present condition, it is necessary to advise people sending in specimens, that the work cannot be attended to, due to lack of facilities, and to say the least, this is very embarrassing, also disappointing, to the one asking for the examination.

Following is a list and brief description of the various contagious and infectious diseases affecting livestock:

BOVINE TUBERCULOSIS.

Bovine tuberculosis is, without a doubt, the most talked of and dreaded disease affecting cattle. It is not a disease confined to any one country or locality, but is present in all parts of the world. The losses, direct and indirect, can hardly be estimated, but it is safe to say that they far exceed those of any other disease affecting livestock. Some few years ago, when the work of eradication was started, it was looked upon with considerable skepticism, and rightly it could be, for at that time, it seemed a hopeless task. Persistency in eradication has been the one thing ever before those who have had the work in charge, and although the disease is found in all parts of this state, it is very gratifying to know that Washington has made greater inroads on this disease than most any state in the Union. For a great many years the subcutaneous or thermal test was used, and to say the least, it is a very slow procedure, necessitating about 24 hours to run a test and in a herd of any size the operator is usually kept quite busy. Later on, it was realized that, to accomplish the desired results, a change would have to be made in the method of testing or the forces necessary to do the work would have to be increased many fold. This resulted in the use of the intradermal and intrapalpebral tests. With all due credit to the subcutaneous test, it is safe to say that the intradermal test has put the State of Washington where it stands today. This test, in the hands of a skilled operator, gives exceptionally satisfactory results. It enables an inspector to test many times the number of cattle that could be tested with the subcutaneous test and especially to the farmer it is a time saver.

At this time, the state law makes it optional with an owner whether he shall test, and it is upon written application to the Department that an inspector is sent to do the work. The Division of Dairy and Livestock has enjoyed the hearty cooperation of the county agents and farm bureaus in promoting this work, and to them much credit is due. In many localities, practically all the herds have been tested, while in others there seems to be considerable indifference. Occasionally, there are found conscientious objectors. In some instances where conclusive evidence has been produced of a badly infected herd, the test has been made against the wishes of the owner. In localities where the work has been favorably accepted, the number of reactors have been reduced to a minimum, and only occasionally now is there found a bad foci of infection.

Public sentiment and the fact that nearly all purebred sales are requiring the cattle to be free from tuberculosis and give a sixty or ninety day retest, are big factors that enter into the eradication of the disease.

There is considerable controversy pro and con, relative to the use of milk from tubercular cattle. It is true that pasteurization renders the milk or milk products reasonably safe, but in no way helps the source of contamination or lessens the infection, which spreads among the herd only to spell ruination in time. Right here enter the questions: "Should there be compulsory testing? Should there be a compulsory pasteurization law? Or both?" These are questions of vital importance, and are worthy of much consideration.

The sale and use of tuberculin should be controlled, and it is only by law that it can be properly handled. It would appear that a law should be enacted regulating its use and sale.

At this time, when tuberculin is sold promiscuously, the unscrupulous cow dealer takes advantage of the farmer at large and peddles his stock, to the sad realization of the purchaser.

The law pertaining to tuberculin testing that has been in effect for the past two years seems to have solved the problem from an economical standpoint, and this has been one of the greatest barriers to the work.

If, in the opinion of the inspector, the animal is infected with tuberculosis, the owner of the animal shall have the option of indemnity or quarantine. If he selects indemnity, the animal is appraised at its commercial or breeding value and slaughtered within thirty days from date of appraisal under the supervision of a veterinary inspector of the Department of Agriculture or the United States Bureau of Animal Industry or a veterinarian duly licensed to practice in the state of Washington. If the owner of reactors has complied with all lawful quarantine regulations, the Department of Agriculture will cause to be paid to the owner of the animal or animals one third of the difference between the appraised value of each animal so destroyed and the value of the salvage thereof; provided that in no case shall any payment by the Department of Agriculture be more than $25.00 for a grade animal or more than $50.00 for a pure-bred animal. The United States Bureau of Animal Industry will pay, if, in their opinion, the lawful quarantine regulations have been complied with, a sum equal to that paid by the state.

Reactors, when found, are tagged with a reactor tag, which serves as a means of identification, a diagram of markings is made and a quarantine issued. Should the owner, in the case of a valuable pure-bred animal, choose the quarantine provision, the animal or animals are placed in a barn or pasture separate and apart from all other cattle. .

The $50,000.00 appropriation for the two years, ending March 31, 1921, served its purpose well, but unfortunately, was not enough and the work had to be discontinued except in cases where the owner would waive the right for indemnity or hold the animals in quarantine. It is hoped that the legislature will, at its next session, give due consideration to this work, and grant an appropriation sufficiently large enough to carry the work through the next two years.

TUBERCULIN TESTS UNDER STATE DEPARTMENT OF AGRICULTURE.

	Number Herds Tested	Number Animals Tested	Number Reactors
June 10, 1913, to June 30, 1914		6,562	349
July 1, 1914, to June 10, 1915	513	11,280	1,106
June 10, 1915, to June 30, 1916	2,292	28,930	1,954
July 1, 1916, to June 30, 1918	3,866	48,852	1,896
July 1, 1918, to June 30, 1920	7,092	76,156	2,646
Totals		171,780	7,951

TUBERCULIN TESTS CONDUCTED BY THE STATE DEPARTMENT OF AGRICULTURE AND THE UNITED STATES BUREAU OF ANIMAL INDUSTRY.

July 1, 1918, to June 30, 1920.

COUNTIES	Number Herds Tested	Number Cattle Tested	Number Healthy	Number Diseased	Number Suspects	Number in Quarantine	Percentage of Diseased Cattle
Adams	11	123	123				
Asotin							
Benton	144	1,054	995	56	3	4	5.32
Chelan	36	431	399	31	1	1	7.19
Clallam							
Clarke	421	5,258	5,008	250		1	4.75
Columbia	3	111	99	11	1	1	9.9
Cowlitz	64	1,299	1,231	68		7	5.23
Douglas							
Ferry	1	1		1			100%
Franklin	4	61	19	42			68.85
Garfield							
Grant	57	508	489	19		3	3.74
Grays Harbor	121	1,762	1,691	70.	1	1	3.97
Island	607	3,611	3,571	40			1.1
Jefferson	151	2,509	2,432	70	7	26	2.78
King	772	10,891	10,598	273	20	33	2.5
Kitsap	29	164	161	3			1.82
Kittitas	144	1,351	1,242	109		3	8.06
Klickitat							
Lewis	279	2,730	2,676	49	5	5	1.79
Lincoln	382	2,698	2,627	71			2.63
Mason	109	835	810	25			2.99
Okanogan	44	522	512	10			1.91
Pacific	366	3,286	3,197	89			2.7
Pend Oreille							
Pierce	295	4,754	4,623	129	2	5	2.71
San Juan	62	84	82	2		1	2.38
Skagit	50	726	677	48	1	4	6.61
Skamania	3	39	35	4			10.25
Snohomish	624	7,176	6,945	228	3	1	3.17
Spokane	435	5,670	5,347	318	5	15	5.6
Stevens	63	745	730	14	1	2	1.87
Thurston	209	3,175	3,118	57		1	1.79
Wahkiakum	162	1,955	1,926	29		2	1.48
Walla Walla	90	998	936	54	8		5.41
Whatcom	678	7,133	7,005	123	5	23	1.72
Whitman	134	920	826	94		1	10.21
Yakima	542	3,576	3.313	259	4	54	7.24
Totals	7,092	76,156	73,443	2,646	67	194	~~7.68~~ 3.47

TAKEN FROM REPORT OF UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY, WASHINGTON, D. C.

Summary of Tuberculosis Eradication Work in Cooperation With the Various States, From July 1, 1919, to June 30, 1920.

STATES	TUBERCULIN TESTS			EMPLOYEES		Total Accredited Herds in the State
	Total Number Herds or Lots	Total Number of Cattle Tested	Total Number Reacted	Bureau	State	
New York	971	27,671	3,150	62	50	285
Georgia	311	7,709	91	21	12	81
Maryland	773	10,804	669	74	16	617
Alabama	603	13,760	166	15	10	285
North Dakota	1,413	23,546	750	34	73	1,548
Massachusetts	170	4,397	175	42	....	159
Maine	928	10,714	298	36	35	1,270
Rhode Island	35	510	22	6	....	30
Connecticut	215	5,727	953	12	11	80
New Hampshire	101	2,462	194	11	....	36
West Virginia	535	6,868	152	37	24	127
Illinois	1,210	20.519	1,155	102	61	378
South Carolina	289	6,659	129	24	25	256
Ohio	1,630	24,540	1,099	78	105	892
Iowa	1,157	27,500	2,211	56	40	176
Colorado	1	58	2	1	....	....
Wyoming	1	8	1	1	....	....
Texas	510	11,273	96	6	14	....
Kentucky	605	11,578	305	39	41	396
Pennsylvania	1,447	19,659	1,444	68	57	1,242
Montana	1,044	24,201	620	30	40	366
Indiana	837	16,891	498	67	36	864
Mississippi	2,024	21.461	102	54	15	288
Missouri	806	21,762	548	29	27	19
Michigan	720	14,149	434	61	20	663
Nebraska	544	12,943	643	25	48	141
Arkansas	125	2,266	42	7	10	56
Wisconsin	1,665	43,679	1,403	85	70	971
Vermont	2,085	37,978	3,241	61	53	474
Tennessee	625	14.796	202	38	25	604
Louisiana	414	9,938	237	20	....	28
Oklahoma	587	11,904	823	28	31	12
South Dakota	287	6.812	474	25	19	101
Oregon	2.069	22,295	608	24	27	251
Washington	4,629	47.659	1,539	32	60	128
Virginia	1,159	24.255	501	90	17	3,272
North Carolina	839	11,517	241	38	27	767
Minnesota	2,223	53,713	1,526	132	77	3,569
Utah	792	10,532	86	37	8	281
Idaho	988	11,161	237	28	16	38
Nevada	728	9,300	515	12	32	3
Florida	718	11,168	429	37	53	62
Kansas	445	12,689	310	45	12	376
New Jersey	260	5,880	424	17	12	128
Delaware	157	2,700	191	11	8	60
District of Columbia	425	1,538	7	19	....	85
Miscellaneous	259	553	18	14	....	....
Totals	39,389	699,795	28,961	1,791	1,317	21,325

FEDERAL STATE ACCREDITED HERD AGREEMENT FOR THE CONTROL OF TUBERCULOSIS.

In December, 1917, a meeting of a joint committee, composed of breeders and members of the United States Livestock Sanitary Association, was held in Chicago to make and pass resolutions for the purpose of accrediting herds that are tuberculosis free; that is, herds in which no reactors have been found upon two annual or three semi-annual tests. The resolutions, as first passed, dealt with pure-bred herds, or those containing at least one pure-bred animal, but one year later resolutions were passed admitting grade herds.

The accredited herd plan is of practical value to the livestock owner. It enables the holders of accredited herd certificates to move cattle interstate or to a foreign country for one year without further retest.

The rapidity with which the work has progressed was not anticipated. Veterinarians, county agents, farm bureaus and breeders' organizations have given it their unanimous support.

When a herd has been officially accredited for two years, it may then be tested by any veterinarian at the owner's expense, provided that the veterinarian is on the approved list for interstate testing as authorized by the state and bureau for this work. No herd test may be made, however, unless the veterinarian and owner receive instructions from the state official.

A copy of the accredited herd agreement with amendments follows:

Whereas, the Bureau of Animal Industry of the United States Department of Agriculture and the Wastington State Department of Agriculture, for the purpose of improving the pure-bred dairy and beef breeds of cattle in the United States, encouraging recognition of the importance of maintaining herds of such cattle free from tuberculosis, and promoting the interchange of healthy pure-bred cattle, proposes, so far as available funds permit, to cooperate with the breeders of pure-bred cattle, by assisting them to eradicate tuberculosis from their herds and to maintain officially tuberculosis-free accredited herds.

Now, Therefore, in consideration of receiving assistance from the Bureau of Animal Industry and the Washington State Department of Agriculture, along the lines and for the purposes specified, I, ... do hereby agree to cooperate with the said Bureau and State officials upon the following terms:

1. I will permit my entire herd, or any cattle of my herd, to be examined and to be tuberculin tested or retested at such times as are considered necessary by the Bureau and State officials.

2. I will cause all animals which show physical evidence of tuberculosis to be promptly slaughtered under the United States meat-inspection regulations, and I will cause the carcasses of said animals to be disposed of according to the meat-inspection regulations of the Bureau of Animal Industry and State laws, based upon the lesions found upon post-mortem inspection.

3. All animals which react to the tuberculin test, but which show no physical evidence of tuberculosis, shall be removed from the herd and shall be disposed of as recommended by the Bureau or State officials.

4. It is agreed that quarantined reacting bulls may be used for breeding, provided they are held upon the staff, their sexual organs properly disinfected, and the cow restrained by some suitable method so as not unnecessarily to be exposed to tuberculosis from the bull or infected premises.

5. I will cause, in all cases where the milk or milk products from quarantined reacting cows are to be used for any purposes whatever, the said milk or products to be first submitted to pasteurization at not less than 150 degrees F. for not less than 20 minutes.

6. I will cause the calves from quarantined reacting cows to be removed from their mothers at birth, to be maintained upon premises free from infection with tuberculosis, and to be fed upon the milk of cows which have passed a satisfactory tuberculin test or upon the pasteurized milk of tuberculin reactors.

7. I will allow no cattle to be associated with my herd which have not passed a tuberculin test approved by the Bureau or State officials. I will keep all new cattle separated from my herd pending the application of a tuberculin test by an inspector of the said Bureau or State. I will notify the proper officials immediately, giving details of the identification, characteristics, and records of tuberculin tests of any cattle which may be added to my herd.

8. I will subject any premises contaminated by tuberculous animals, as indicated by a physical examination or a tuberculin test, to a thorough cleaning and disinfection, at my expense, under the direction or supervision of the Bureau or State officials. I will comply with all reasonable sanitary measures and other recommendations for the control of tuberculosis.

The following Uniform Methods and Rules for tuberculosis-free accredited herds of pure-bred cattle, having been adopted by all parties concerned, are entered as a part of this agreement:

1. A tuberculosis-free accredited pure-bred herd is one which has been tuberculin tested by the subcutaneous method, or any other test approved by the Bureau of Animal Industry, under the supervision of the Bureau of Animal Industry, or a regularly employed veterinary inspector of the State, in which cooperative tuberculosis eradication work is being conducted jointly by the United States Department of Agriculture and the State. Further, it shall be a herd in which no animal affected with tuberculosis has been found upon two annual or three semi-annual tuberculin tests, as above described, and by physical examination.

2. The entire herd, or any cattle in the herd, shall be tuberculin tested or retested at such time as is considered necessary by the Federal and State authorities.

3. No cattle shall be presented for the tuberculin test which have been injected with tuberculin within 60 days immediately preceding or which have at any time reacted to a tuberculin test.

4. No herd shall be classed as an accredited herd in which tuberculosis has been found by the application of the test, as referred to in paragraph 1, until such herd has been successfully subjected to two consecutive tests with tuberculin, applied at intervals of not less than six months, the first interval dating from the time of removal of the tuberculous animal from the herd.

5. Prior to each tuberculin test satisfactory evidence of the identity of the registered animals shall be presented to the inspector. Any grade cattle maintained in the herd, or associated with animals of the herd, shall be identified by a tag or other marking satisfactory to the State and Federal officials.

6. All removals of registered cattle from the herd, either by sale, death, or slaughter, shall be reported promptly to the said State or Federal officials, giving the identification of the animal and, if sold, the name and address of the person to whom transferred. If the transfer is made from the accredited herd to another accredited herd, the shipment shall be made only in properly cleaned and disinfected cars. No cattle shall be allowed to associate with the herd which have not passed a tuberculin test approved by the State and Federal officials.

7. All milk and other dairy products fed to calves shall be that produced by an accredited herd, or, if from outside or unknown sources, it shall be pasteurized by heating to not less than 150 degrees F. for not less than 20 minutes.

8. All reasonable sanitary measures and other recommendations by the State and Federal authorities for the control of tuberculosis shall be complied with.

9. Cattle from an accredited herd may be shipped interstate, by certificate obtained from the office of the State live-stock sanitary officials of

the State in which the herd is located or from the office of the Bureau of Animal Industry, without further tuberculin test for a period of one year, subject to the rules and regulations of the State of destination.

10. Strict compliance with these methods and rules shall entitle the owners of tuberculosis-free herds to a certificate, "Tuberculosis-Free Accredited Herd," to be issued by the Bureau of Animal Industry and the State live-stock sanitary authority. Said certificate shall be good for one year from date of test unless revoked at an earlier date.

11. Failure on the part of owners to comply with the letter or spirit of these methods and rules shall be considered sufficient cause for immediate cancellation of cooperation with them by the State and Federal officials.

My herd is composed as listed below:

Breed...............................	Pure-bred	Grade	Total
Females over six months old.....	....	....	....
Males over six months old	....	....	....
Calves under six months old	....	....	....

IN WITNESS WHEREOF I have signed this agreement this..........day of ....one thousand nine hundred and..............

............................Owner.

Address..............................

WITNESS:............................

At the meeting of the United States Live Stock Sanitary Association, held in Chicago December 3, 1919, the following amendment to the Uniform Rules and Methods of the accredited herd plan was made:

(a) When a herd has been officially accredited continuously by the United States Department of Agriculture and State for a period of two years, it may then be tuberculin-tested annually by any veterinarian whose name is on the accredited list of veterinarians approved by the United States Bureau of Animal Industry, provided that before any veterinarian other than one who devotes his entire time to the work in any state or the Bureau of Animal Industry can be approved for accredited herd work, he shall have passed an examination conducted by the proper live stock sanitary official of the state in which he resides and the Bureau of Animal Industry. He then shall be eligible to conduct annual tuberculin tests upon herds which have been officially accredited, on dates approved by the proper state livestock sanitary official and the inspector in charge of the Bureau of Animal Industry in the state wherein the herd is located.

(b) No herd test can be made by such an approved veterinarian unless he has instructions in writing from the state official to that effect. The dates for the annual tests for each herd shall be recorded in the state office and also in the office of the inspector in charge. On any annual retest the State and Bureau reserve the right to have a regularly employed official present on the farm to supervise the testing done by the approved veterinarian

(c) The approved veterinarian shall conduct each test strictly in accordance with instructions issued by the Bureau of Animal Industry to employees engaged in cooperative tuberculosis eradication work. At the conclusion of each test the approved veterinarian shall submit to the State veterinarian and the inspector in charge of the Bureau of Animal Industry, a copy of the record of the test.

(d) Any animal of a herd under supervision which may react in any herd tuberculin tested by an approved veterinarian shall be marked for the purpose of identification, in accordance with the regulations of the state in which the animal is located.

(e) Tuberculin tests applied by veterinarians other than those regularly employed by the State and the Bureau of Animal Industry shall be paid for by the owner of the herd.

Amendment 1 of B. A. I. Order 264, pertaining to the exportation of animals, authorizes all veterinarians who have been appointed by the state authorities and approved by the Bureau of Animal Industry to apply tuberculin tests to cattle intended for export to countries other than Canada.

The four copies of the certificate issued should be forwarded to the chief veterinarian's office, who will forward them to the inspector in charge of tuberculosis eradication work in state of origin, who will endorse all four copies and forward them to their respective destinations.

Prior to making this export test the veterinarian conducting the test should have the owner of said cattle execute the following affidavit and forward with the copies of certificate as issued:

I.......................... do solemnly swear that any reactors to the tuberculin test to be made of my cattle for export to.............. will be immediately placed in a satisfactory quarantine and held subject to the laws and regulations of the state in which tested, and that no animal presented for the test has at any time reacted to tuberculin or received any injection of tuberculin within a period of 60 days preceding the date upon which they are offered for said tuberculin test.

(Signature).......................

Subscribed and sworn to before me at.......................this...... day of.......................1920.

(Signature).......................
Notary Public.

Following is a list of the Federal-State officially accredited herds:

NAME	PLACE	BREED
Carlyon & Hogg	Bellingham	P. B. Jersey
Jenner, Fred J.	Oso	P. B. & Gr. Guernsey
Nisbet, Tom	Chimacum	P. B. & Gr. Holstein
Smith, A. E.	Sumas	P. B. Holstein
Horan, Mike & Son	Wenatchee	P. B. Holstein
Tuttle, R. H.	Walla Walla	P. B. Holstein
Moses, E. M.	Chehalis	P. B. Holstein
Benson, A.	Lynden	P. B. Holstein
Tualco Valley Farm	Monroe	P. B. Holstein
Rogers, Dewey	Spokane	P. B. & Gr. Jersey
Selle, Gust	Colville	Gr. Holstein
Crawford, James	Colville	P. B. & Gr. Holstein
Cochran, George	Dixie	P. B. Jersey
Hamilton, H. P.	Forest	P. B. Holstein
Hudleson, W. M.	Colville	P. B. Jersey
Evans, H. J.	Ferndale	P. B. Holstein
Nisbet, Hugh	Chimacum	Holstein
West, Byron	Mt. Vernon	Holstein
Benson, E. F.	Prosser	P. B. & Gr. Holstein
Gile, A. L.	Chinook	Guernsey
Parpala, John	Nahcotta	P. B. & Gr. Holstein
Van Tassell, E. W.	Wenatchee	P. B. Ayrshire

HEMORRHAGIC SEPTICEMIA.

Hemorrhage septicemia has been reported from every part of the state. It is an acute, infectuous disease and usually terminates fatally, unless properly handled at the first indication of its symptoms. Cattle, sheep, swine and horses are apparently similarly affected.

On the west side, where sheep are raised, it has caused considerable losses. In many places the hog industry is greatly menaced; the reports being that of hog cholera, but upon investigation, the symptoms are more indicative of hemorrhagic septicemia. Very few cases of true hog cholera, as observed in the central states, are seen here. In cattle, mostly young stock, the losses have been considerable.

Often there is little opportunity to observe symptoms, as the animal will appear all right in the morning and at night be dead or beyond hopes of saving; however, in the majority of cases, the animal hangs on for from two to ten days.

The general symptoms, as usually observed at the onset, are that the animal appears dumpish, indifferent as to surroundings, usually refuses food, but if eating, may salivate and swallow with difficulty, labored breathing, weakness and unsteady gait, eyes appear dull and sunken. There is always considerable fever. In cases of chronic nature, coughing is quite a constant symptom.

The medicinal treatment of this condition has proven very unsatisfactory. Prevention is the main factor, and this should be put into effect by rigid sanitary precautions and prophylactic vaccination. However, in cases where the disease is already present, quarantine, sanitation and vaccination with hemorrhagic septicemia vaccine or mixed infection bacterins will, in many cases, reduce the losses to a minimum.

Acute and subacute cases of this disease may be confused with Anthrax, but a bacteriological examination will readily differentiate.

CONTAGIOUS ABORTION.

The prevalence of infectious abortion in the herds throughout this state, has, during the past few years, been of great significance. Its ravages are well known to every one engaged in the dairy and breeding industry, and the losses resulting from it and its sequel are estimated to be second only to tuberculosis.

It has been erroneously held that it cannot be hoped to eradicate or control abortion until its biology is known; knowledge of the biology of a disease does not necessarily control the disease, nor does ignorance thereof prevent its control.

The eradication of abortion in cattle is not to be brought about by the mere knowledge of its biology, but rather by learning how the causative infection invades the organs of the animal, how to prevent such invasion, and, if possible, how to destroy or render inert the infection already present.

The disease being of a chronic nature, there is a tendency to acquire an immunity. To keep an animal until such immunity is acquired is a speculative proposition, and from an economic standpoint, is not always the wise move, moreover, a great deal depends on the commercial and breeding value of the animal.

At present there does not appear to be any method or agent that will serve as a proven cure for abortion. Several methods have been tried, with varied degree of success. The sequelae, or diseased condition resulting from abortion, seems to be of greater significance than the mere fact that an animal aborts. Apparently, the treatment is, at this time, directed more towards the conditions following abortion. It is not the mere fact that an animal aborts, but usually the resulting sterility that causes an owner to sell the animal to a butcher or to an unsuspecting buyer, who may in time suffer a great loss from the introduction of a diseased animal to a sound herd.

It would appear that some control measures should be enacted, but due to the fact that it is so widespread and the task of controling it would involve a very great percentage of the herds, it is not probable that such measures could be put in operation at this time.

Legislation that would require the seller of cattle to provide the purchaser with a statement as to their past and present condition, would be a big step in the right way.

BLACKLEG (Milzbrand)

Blackleg is an acute, infectious, but not contagious disease of cattle and exceptionally of other ruminants and of swine. It is caused by an anaerobe organism, known as the bacterium chauveaui. The disease manifests itself in young cattle, while older cattle are attacked only exceptionally. It is easily controlled by a preventive vaccination, which is now universally practiced by nearly all cattle raisers, thereby reducing the losses to a minimum.

Blackleg exists as an endemic disease, mostly in that section of the state lying east of the mountains, although there have been a few cases reported from the west side.

Until recently, the blackleg pellets have been used by most stockmen. The vaccine received by this department from the U. S. Bureau of Animal Industry and distributed gratis to the farmers, is of the powdered form, to be administered in suspension with sterile water. The preparations recently introduced are blackleg aggressin, blackleg filtrate and anti-blackleg serum.

During this biennium 13,000 doses of blackleg vaccine have been distributed to veterinarians and cattle owners.

JOHNE'S DISEASE (Paratuberculosis of Cattle)

Johne's disease is a chronic infectious and contagious disease, caused by a bacilli affecting the intestinal muscus membrane. The symptoms of the disease consist in gradual emaciation or loss of flesh, unattended by fever or pain; however, when diarrhea develops, it may occasion irritation, causing some pain. The appetite is quite variable and milk supply decreased. On post-mortem, the walls of the small intestines are found to be considerably thickened.

This disease has been quite satisfactorily diagnosed and reported from several districts on the west side. Inasmuch as all attempts to treat the disease have led to unsatisfactory results, it is the best policy to isolate or destroy affected animals as soon as possible after a satisfactory diagnosis of the disease. It is usually found in low, wet pastures or those that frequently become flooded.

GLANDERS.

Glanders (Farcy) is a contagious and infectious, usually chronic disease, which chiefly affects horses and mules, also human beings. It is characterized by the development of nodules that have a tendency to break down, causing ulcers. It is caused by the bacillus mallei, and is one of the oldest of diseases, having been known by the Greeks since the fourth century.

The disease is decreasing from year to year. It was feared that the extensive movement of horses for war purposes would tend to spread the infection. However, it is very gratifying to know that such has not been the case. There are reported from time to time isolated cases, particularly from that portion of the state lying east of the Cascade Mountains.

The control of glanders involves, as has been pointed out in previous reports, careful supervision over horses in congested areas, and the prevention of new infection from outside sources. The congested areas are in the wheat belt, and it is there that the biggest percentage of reactors are found. The fact that the ophthalmic mallein test has been adopted in lieu of the subcutaneous has made possible a more extensive campaign in the control of this disease, since the time required to conduct the examination is less and the results obtained are very accurate. This is especially true as applied to range horses.

In case there is a question as to the correctness of the ophthalmic test, samples of blood serum from the suspicious horses are sent to the Pathological Labaratory, United States Bureau of Animal Industry, where the complement-fixation and agglutination tests are made, and the reports sent to this office.

Coincident with the finding of reactors, it has been the policy of the Department to immediately destroy these animals. This often seriously inconveniences the farmer, especially so when they are being used at the time of planting and harvesting crops. Those known as open cases are immediately destroyed, but it has been found necessary at times to allow the farmer to use reactors that do not show clinical symptoms, until arrangements could be made to replace the diseased horses. This permission is granted only where strict surveillance can be maintained.

Cleaning and disinfecting the infected premises involves considerable care and is done under the supervision of an inspector.

In several instances there has been a considerable loss to the farmer, as he does not receive any indemnity for destroyed glandered horses. For that reason, the work has not progressed as well as it would have had indemnity been allowed, as in the case of tuberculous cattle. The horseman feels that he is unjustly considered, and it would appear that legislation could be enacted whereby owners of glandered horses would receive indemnity, thereby assisting the department to further its work along this line. Following is a summary of the glanders eradication work done by the department during the biennium:

HORSES TESTED FOR GLANDERS—July 1, 1918, to June 30, 1920.

COUNTIES	Number Horses Tested	Number Diseased	Number Healthy	Number Suspects	Number Slaughtered	Percentage of Reactors
Adams	80	6	72	2	7	7.50%
Columbia	650	20	630	....	19	3.07%
Ferry	2	1	1	....	1	50.00%
Garfield	121	9	111	1	10	7.43%
King	5	....	5	....	....	....
Lincoln	30	....	30	....	....	....
Okanogan	143	17	126	....	10	11.89%
Pierce	1	....	1	....	....	....
Spokane	1	....	1	....	....	....
Stevens	24	3	21	....	3	12.50%
Walla Walla	141	17	115	9	6	12.50%
Yakima	10	3	7	....	3	30.00%
Totals	1,208	76	1,120	12	59	134.89%

RABIES (Hydrophobia)

Rabies is an acute, contagious and invariably fatal, infectious disease caused by a filterable micro-organism known as negri bodies. It is usually transmited by the bite of an infected animal to other animals and to man. Practically all warm-blooded animals are susceptible to rabies.

The period of incubation, or the time elapsing between the bite and development of the first symptoms, is extremely variable. Three factors seem to influence the incubation period; usually the virulence of the organism, susceptibility of the animal and the site of infection. It is from ten days to one year. In dogs and swine, the period of incubation is, as a rule brief—ten to thirty days; in cattle and horses, somewhat longer—mostly one to three months. Young animals develop the disease earlier than old ones.

Surgical and medical treatment of the site of infection, together with the Pasteur treatment, which is a series of vaccinations, is the only logical treatment and the one that should be employed at all times in man, animals rarely ever receiving treatment.

A case was reported from North Bend, where a dog, coming supposedly from east of the mountains, had biten a boy at a road camp near North Bend, and in its mad race bit several dogs. With the cooperation of the officials of North Bend, all exposed dogs were killed and others either muzzled or chained up for a period of ninety days.

Three cases, at different times, were reported from Seattle and two from Tacoma. From the east side of the mountain, especially in the southeast portion, several cases have been reported, supposedly caused by dogs being bitten by rabid coyotes.

Heads of suspicious animals, upon dying, are sent to the Veterinary Department of the Washington State College at Pullman and Washington State Board of Health, Seattle, where a laboratory examination has been made to verify the diagnosis. It is in all cases, where the animal is under control, better to allow the animal to die, for when killed in the first stages, the negri bodies are not always present in the brain and quite often the brain is so mutilated in killing the animal that a diagnosis cannot be made.

The tramp dog is not only dangerous from a rabid standpoint, but is a menace to the livestock industry at large. It would appear that there should be more stringent methods for the control of dogs.

Following are laws and quarantines pertaining to the control of rabies during the past bienniem:

Be it enacted by the Legislature of the State of Washington:

Section 1. That Section 3204 of Remington & Ballinger's Annotated Codes and Statutes of Washington be amended to read as follows:

Section 3204. Quarantine shall mean the placing and restraining of any animal or animals, by the owners or agents in charge of them, within certain enclosures described or designated by the commissioner of agriculture, the assistant commissioner of agriculture assigned to the division of dairy and livestock or any inspector of the Department of Agriculture, in writing, and if the quarantine shall be for the purpose of preventing the spread of rabies or hydrophobia, the notice shall be published in the official newspaper of the county or counties included in the quarantined area, or if there be no such newspaper, then in one newspaper circulating generally within such area, and said notice shall contain a warning to the owners of dogs within the quarantined area to confine closely or to muzzle all such dogs to effectually prevent biting, and any dog found running at large in such quarantined area at any time after five days from the date of the publication of such notice or known to have been removed from or to have escaped from such area, not being muzzled as aforesaid, may be shot or otherwise destroyed, by any person, without liability therefor.

Any owner or owners or agent who fails to comply with or wilfully violates or negligently allows such quarantine to be violated by the escape and running at large of quarantined animals shall be guilty of a misdemeanor.

Section 2. This act is necessary for the immediate preservation of the public peace, health and safety, and shall take effect immediately.

Passed the Senate, January 25, 1917.
Passed the House, February 7, 1917.
Approved by the Governor, February 10, 1917.

Order No. 28.

STATE OF WASHINGTON—DEPARTMENT OF AGRICULTURE.
Division of Dairy and Livestock.

NOTICE OF QUARANTINE.

The fact has been determined and notice is hereby given, that a contagious, communicable disease, known as rabies or hydrophobia, exists in the County of Stevens, in the State of Washington:

Now, Therefore, I, E. F. Benson, Commissioner of Agriculture of the State of Washington, under authority conferred by Chapter 13, Laws of 1917, of the State of Washington, do hereby quarantine the entire area of Stevens County, in said State of Washington, and establish the following

Rules and Regulations.

1. All dogs running at large within the boundaries of Stevens County, Washington, shall be properly and securely muzzled so as to prevent their biting other dogs or animals.

Provided, that this regulation shall not apply to dogs under leash or securely confined on the premises of their owner.

2. No dogs shall be transported or moved from the territory hereinbefore quarantined to any point outside the quarantined area unless permission has first been secured from the Commissioner of Agriculture, or his authorized agent.

Penalty.

Any owner, owners or agents who wilfully violate or negligently allow this quarantine or these rules and regulations to be violated, shall be guilty of a misdemeanor and may be punished by a fine of not more than two hundred and fifty dollars ($250.00), or be imprisoned in the county jail not more than ninety (90) days.

Peace officers, under the provisions of Section 5, Chapter 100, Laws of 1915, are requested to assist in the enforcement of said quarantine rules and regulations, and any person is authorized, under the provisions of Chapter 13, Laws of 1917, to destroy, without liability therefor, any dog not muzzled as herein provided, and found running at large in the herein defined area, to-wit: Stevens County, Washington.

(Signed) E. F. BENSON,
Commissioner of Agriculture.
By R. J. DONOHUE,
Chief, Division of Dairy and Livestock.

Dated September 22, 1919.

Order No. 25.

STATE OF WASHINGTON—DEPARTMENT OF AGRICULTURE.
Division of Dairy and Livestock.

Effective February 10, 1920.

It is ordered, that the quarantine for rabies placed upon the county of Stevens, by Department of Agriculture, Order No. 23, dated September 22, 1919, be, and the same is hereby revoked. The effect of this order is to remove restrictions imposed by the Department of Agriculture on the running at large of unmuzzled dogs.

(Signed) E. F. BENSON,
Commissioner of Agriculture.

Dated February 2, 1920.
(Seal)

HOG CHOLERA (Swine Fever, Typhoid Fever)

Hog cholera is a contagious and infectious disease of swine, and is apparently on the increase. This may be attributed to the fact that, as a rule, the vaccination has not been carried out to as great an extent as in the hog raising districts of the central states. Cholera is the most serious of all swine diseases occurring in this state and it, together with what is known as hemorrhagic septicemia, causes by far the greatest loss among swine. At present there is considerable controversy relative to the possibility of a great many cases of so-called hog cholera being hemorrhagic septicemia.

Hog cholera can be controlled by the adoption of certain measures, the fundamental principles of which are:

1. Vaccination.
2. Quarantine.
3. Sanitation.

1. By vaccination is meant the use of preventative serum and virus treatment; this being the only known treatment that will successfully prevent and combat hog cholera. Several conditions must be considered if success is to be obtained from the use of serum. (a) Condition of animals to be treated. (b) Methods employed. (c) Quality of serum. Serum plants doing interstate business are under Federal supervision and serum from such companies has proven satisfactory, providing it is used within the time limit. To intelligently administer the treatment, one must have a thorough understanding of the disease and treatment, and since only competent veterinarians possess these qualifications, the most favorable results follow the use of serum and virus in their hands. In addition to the serum treatment, vaccinating with mixed infection bacterins has given uniformly good results.

2. Quarantine is the most abused and least understood word in the stockman's vocabulary. It is usually interpreted to mean a restriction of their personal liberties, but such is not the case. It should mean protection. As applied to hog cholera, it covers the care of sick hogs and proper disposition of the dead ones. It is very necessary that affected hogs be so confined as to prevent a distribution of the virus which is discharged by the urine, feces and secretions from eyes and nose. Dead hogs should be burned or buried in quicklime. This is a matter of protection to the owner and his adjacent neighbors.

3. **Sanitation.** Without sanitation, the other fundamental principles are practically worthless. A thorough cleaning and disinfection of all pens, hog houses and exposed places is essential to rid the place of infection.

The work of inspectors in this department has included the investigation of reported outbreaks, sanitary survey of infected premises, and supervision of the cleaning and disinfection of infected farms. Considerable of this work has been done by the practicing veterinarians of the state, and to them much credit is due for their assistance and cooperation in this work.

Doses of serum and virus recommended:

SERUM

Weight of Swine.	Dose of Serum.
20 to 40 pounds	30 cubic centimeters
40 to 60 pounds	30 to 40 cubic centimeters
60 to 90 pounds	40 to 50 cubic centimeters
90 to 120 pounds	50 to 60 cubic centimeters
120 to 150 pounds	60 to 70 cubic centimeters
150 to 180 pounds	70 to 80 cubic centimeters
180 pounds and over	80 to 100 cubic centimeters

VIRUS

Weight of Swine.	Dose of Virus.
20 to 40 pounds	1 cubic centimeter
Over 40 pounds	2 cubic centimeters

Order No. 21

STATE OF WASHINGTON—DEPARTMENT OF AGRICULTURE.

Division of Dairy and Livestock.

Effective July 1, 1919.

Regulations governing the sale, distribution and use of anti-hog-cholera serum, also the sale and distribution and use of serum and virus within the State of Washington:

1. All anti-hog-cholera serum sold within the state or imported into the State of Washington for sale, distribution or use shall be produced under a license issued by the U. S. Bureau of Animal Industry, Department of Agriculture.

(a) The use of anti-hog-cholera serum is not restricted in any way.

2. The sale, distribution or use of virus shall be prohibited, except under the following conditions, to-wit:

(a) All virus used for immunizing hogs against cholera shall be administered by an authorized veterinary inspector of the Department of Agriculture.

(b) No virus shall be shipped into the State of Washington or sold for distribution except to an authorized veterinary inspector of the Department of Agriculture.

(c). All hogs subjected to the simultaneous method of immunization, together with all yards, corrals, sheds or feeding lots to which said hogs have access (which corrals, yards, sheds, or feed lots must not be adjoining a public highway), must be quarantined for a period of not less than thirty days. Conspicuous notices of quarantine shall be posted upon said premises in the form of a placard furnished by the Department of Agriculture.

(d) All hogs subjected to the simultaneous method of immunization must be dipped in one of the standard recognized dips before being released from quarantine, and all yards, corrals, sheds or feed lots in which said hogs had access must be thoroughly cleaned and disinfected. Dipping of hogs, thorough cleaning and disinfecting of yards, corrals, sheds, or feed lots must be done under the supervision of an inspector of the Department of Agriculture.

3. Veterinary inspectors administering virus shall immediately render full report to the Commissioner of Agriculture, giving names and addresses of owners and number of hogs treated.

4. Violations of any of the above rules and regulations will constitute a misdemeanor.

E. F. BENSON,
Commissioner of Agriculture.
By R. J. DONOHUE,
Chief, Dairy and Livestock Division.

Sec. 3203, Rem.

H. H. McCarthy,
J. B. Brown,
F. B. Hedges,
State Board of Health.

Order No. 22.

STATE OF WASHINGTON—DEPARTMENT OF AGRICULTURE.

Division of Dairy and Livestock.

Effective July 1, 1919.

Rules and Regulations Relating to Hog Cholera and Swine Plague.

1. When an outbreak of hog cholera or swine plague appears the owner must immediately notify the Commissioner of Agriculture, or an authorized veterinary inspector of the Department of Agriculture.

The said officer shall quarantine all portions of the premises upon which hog cholera exists, and placard same with card furnished for this purpose.

2. All persons, except the owner, duly authorized assistants or medical advisor, are forbidden to enter an enclosure where diseased hogs are confined.

3. Hogs must not be moved from any quarantined premises except by permission of the Commissioner of Agriculture or his authorized agent.

4. It shall be the duty of the owner, or any other person having in charge any swine that have died of any disease, immediately upon the fact of such death coming to his knowledge, to burn the same to ashes and clean and thoroughly disinfect his pens, yards, and swine houses.

5. No person shall feed any hotel, restaurant or eating house swills, or refuse of packing house offal to swine unless the same has been thoroughly cooked and rendered free from the possibility of carrying hog cholera or other infection that might be transmitted through a cholera infected ham or bacon rind. All dogs in a district where hog cholera is known to exist must be restrained from running at large and must be confined to owner's premises.

6. All railroad cars, steamboats and other means of transporting hogs must be thoroughly cleaned and disinfected before hogs shall be allowed shipment if for purposes other than immediate slaughter.

7. All hogs allowed to come in contact with any public corral, yard, chute or undisinfected railroad car shall be considered as exposed to hog cholera and shall not be sold for feeding or breeding purposes unless immunized with anti-hog-cholera serum.

The violations of these rules and regulations constitutes a misdemeanor.

Sec. 3203, Rem.

E. F. BENSON,
Commissioner of Agriculture.
By R. J. DONOHUE,
Chief, Dairy and Livestock Division.

H. H. McCarthy,
J. B. Brown,
F. B. Hedges,
State Board of Health.

ANTHRAX (Splenic Fever)

Anthrax is an acute, febrile infectious disease of domestic animals, especially of ruminants and horses, caused by the bacillus anthracis. The natural infection in herbivorous animals occurs usually through ingestion of food and water which contain anthrax spores. Carnivorous animals are usually infected from the meat and blood of anthrax carcasses, while the source of infection to man comes usually from handling hides and wool from affected animals.

This state is exceptionally fortunate in that it is free from anthrax, or at least no cases have been reported during the past biennium. The disease, as was reported some time ago from King and Skagit Counties, might have been anthrax; the microscopic examination showed a germ, of which there are many, resembling the bacillus anthracis. The results obtained by animal inoculation were negative, consequently a positive diagnosis was not made. In the sections where the land is flooded by rivers and tide waters, anthrax may, at some future time, become the cause of considerable losses of livestock.

ACTINOMYCOSIS (Lumpy Jaw)

Actinomycosis is a non-contagious, infectious disease of cattle, occasionally affecting other animals and man, caused by the ray fungus. It is a chronic disease and may extend over months and even years, especially so when it develops in the bone structure. Superficial cases, accessible to surgical treatment, respond quite favorably to treatment.

These cases are frequently reported from widely scattered sections of the state, and, if upon investigation are found to be in advanced stages, the animals are killed. Those of supposedly recent origin, which offer a favorable prognosis, are quarantined and treatment suggested.

SHEEP SCAB.

For the past two years, this disease has not manifested itself to any great extent. This may be due, in part, to the thorough campaign conducted in the Fall of 1918. This Department, with the cooperation of the United States Bureau of Animal Industry, has taken every precaution to keep the infection from getting a start. Strict surveillance is kept on sheep from without the state and inasmuch as two of our neighboring states are infected, it is necessary that rigid inspection be maintained.

Scabies is caused by a very minute parasite, the psorptes ovis; these mites burrow into the skin, producing an irritation which causes the sheep to rub, scratch and bite themselves. The wool becomes taggy from the biting and pulling of wool, and as the condition progresses, the affected areas become denuded of wool and a hard crusty scab forms. Later on, the general condition of the sheep may be affected, and if the disease is allowed to progress, death follows in a great many cases.

The scab mite works so insidiously that an entire band may be affected before the condition is detected. The mite is more easily found in areas of recent infection than in the old encrusted areas.

Destruction of the scab mite is the only cure for the condition; the affected sheep will clean up and grow a new fleece as soon as this is accomplished. To this end dipping in a recognized dip approved by the United States Bureau of Animal Industry, is the only safe way. Affected sheep are dipped twice, at intervals of ten to fourteen days, and all exposed sheep are dipped once.

Scabies is a menace to the sheep industry in that the wool crop is, in part, lost and the unthrifty condition of the lambs makes them unfit for the market. The expense connected with the dipping is by no means a small item, and it is for these reasons that the Department is observing every ecaution to keep the sheep of this state from becoming infected.

When sheep scab was discovered in Okanogan county in October, 1918, the following order was issued:

Order No. 12.

STATE OF WASHINGTON, DEPARTMENT OF AGRICULTURE.
Division of Dairy and Livestock.

The fact has been determined, and notice is hereby given, that the contagious disease known as sheep scabies is now known to exist in Okanogan County.

Now, Therefore, I, E. F. Benson, Commissioner of Agriculture, under authority conferred on me by law, do hereby issue the following order, to-wit:

1. All sheep which are, or have been, exposed to the disease of sheep scabies shall be dipped once under the supervision of a veterinary inspector of the Department of Agriculture, or a veterinary inspector of the United States Bureau of Animal Industry, in a dip approved by the said Bureau of Animal Industry.
2. All sheep which are now affected with, or have originated from a flock in which scabies is known to exist, shall be dipped twice in a dip approved by the United States Bureau of Animal Industry, and such dipping shall be supervised by veterinary inspectors of this department or of the Bureau of Animal Industry.
3. All stockyards and stock cars in which sheep known to be affected with scabies have been quartered shall be cleaned and disinfected in a manner approved by the veterinary inspector in charge of this work, before again being used for the quartering or transportation of livestock.
4. For the purpose of this order, all sheep which have been trailed, herded, driven or otherwise moved over the designated driveways of the Okanogan National Forest, shall be considered exposed to the disease known as sheep scabies.

Done at Olympia, Washington, this 7th day of October, 1918.

E. F. BENSON,
Commissioner of Agriculture.
By R. J. DONOHUE,
Assistant Commissioner of Agriculture.

Report by Counties of Sheep Inspected and Dipped for Scabies.

County	Number Inspected Including Re-inspections	Approximate Number Dipped
Adams	25,050	10,600
Asotin	11,374	.....
Benton	130,166	.....
Chelan	1,043	.....
Clarke	3,155	.....
Columbia	19,635	.....
Douglas	184	.....
Ferry	391	.....
Franklin	45,091	.....
Garfield	15,532	.....
Grant	62,271	.....
King	10,100	.....
Kittitas	51,184	.....
Klickitat	77,119	.....
Okanogan	82,788	58,000
Pierce	1,061	1,061
Spokane	1,470	.....
Stevens	745	.....
Walla Walla	39,061	.....
Whitman	16,355	.....
Yakima	151,001	.....

In conclusion, I wish to give credit to the practicing veterinarians for their valued cooperation in the control and eradication of livestock diseases. They have been diligent and accommodating on short notice and very often at a financial loss to themselves. I hope their assistance will continue and that they can be amply rewarded for their services.

Respectfully submitted,
L. C. PELTON,
Chief, Division of Dairy and Livestock.

WASHINGTON STATE BOARD OF VETERINARY MEDICAL EXAMINERS.

Dr. J. T. Seely, Seattle, president.

F. H. Gloyd, Olympia, Commissioner of Agriculture, secretary and treasurer.

Dr. Robert Prior, Yakima, Washington.

Under the veterinary practice act, passed by the Legislature of 1907, a provision was made for a board of veterinary medical examiners, consisting of a president, secretary and treasurer.

The function of the board is to examine applicants who desire to practice their profession in the State of Washington. The examination embraces the following subjects: Anatomy, physiology, histology, bacteriology, surgery, hygiene, sanitation, practice of medicine, contagious diseases, obstetrics and parasitology.

The object is to increase the efficiency of the veterinary profession within the state by licensing practitioners who have the necessary knowledge, and who are capable of administering to the wants of the livestock industry in an intelligent and conscientious manner, and to obstruct the working of empirics and imposters who prey upon the uninformed, rendering a service which, in many instances, is based upon fallacy and really harmful for it imbues the unsuspecting stockmen with a sense of security when, in reality, he is in danger of serious financial loss.

The appropriation for the maintenance of this board is $1,000.00 for the biennium, but due to the fact that the expenditures are limited to the income, it is in reality self-sustaining.

The following is a list of graduate veterinarians licensed to practice in the State of Washington:

Name—	Last Known Address.
Ackley, C.	Centralia
Andresen, J. O.	Vancouver
Antlers, F. H.	Pullman
Badeley, J. C.	Walla Walla
Bailey, J. Hess	Palouse
Baker, E. T.	Moscow, Idaho
Baker, R. E.	Wenatchee
Barnhart, Jesse	Ellensburg
Baynes, C.	Tacoma
Beckman, H. M.	Spokane
Beletski. T.	Wasco, Ore.
Bestul, R. J.	Grants Pass, Ore.
Bigerell, G. W.	Fairfield
Bogart, E. A.	Centralia
Booton, L. R.	Tekoa
Boyles, R.	Colton
Brown, A. C.	Vancouver

Name—	**Last Known Address.**
Brown, D. W.	Battleground
Brown, L. A.	Oregon
Brown, O. S.	Edwall
Brown, S L.	Pullman
Bullivant, J.	Spokane
Button, R. A.	Tacoma
Button, A. I.	Kent
Button, O. G.	Tacoma
Buzard, A. E.	California
Calkins, F. P.	Michigan
Carstensen, C.	Davenport
Cassels, F. H.	British Columbia
Clark A. E.	Oakesdale
Clark, G. W.	Yakima
Close, F. W.	Lewiston, Idaho
Cornwall, O. L.	Almira
Coults, R.	Alaska
Cozier, Carl	Bellingham
Cramer, E. J.	U. S. Army
Crouch, Samuel	Seattle
Crouse, A. E.	Rosalia
Cummings, B.	British Columbia
Craft, A. E.	Sunnyside
Damman, A. J.	Vancouver, B. C.
Davidson, W. W.	Stockton, Cal.
Dinse, A. J.	U. S. B. A. I., Texas
Dirstine, P. H.	Pullman
Donaghue, J. A.	Ritzville
Donohue, R. J.	Tolt
Doty, R. B.	Seattle
Drake, E. J.	South Dakota
Edmonds, E.	Mount Vernon
Ehmer, E. A.	Seattle
Elliott, T.	Uniontown
Ells, F. C,	Spokane
Evans, E. I.	Hartline
Fast, G. B.	Ritzville
Fay, C. P.	Wenatchee
Ferguson, W.	Goldendale
Fetridge, R.	Kent
Fisher, A.	Georgetown
Flanigan, J. A.	Eugene, Oregon
Fleming, R. J.	Palouse
Ford, J. A.	Sumas
Foster, S. B.	Portland, Oregon
Fuller, J. R.	Walla Walla
Fullington, H. C.	Seattle
Galbraith, A. R.	Garfield
Garrett, W. D.	Puyallup
Gibson, J. D.	British Columbia
Gilliam, R. L	Fairfield
Glaiser, E. L.	Tillamook, Ore.
Glaiser, W. V.	Tacoma
Glenn, V. D.	Montesano
Goin, J. W.	Goldendale
Graves, H. T.	Puyallup
Greene, H. H.	Baker, Oregon
Griesinger, Edwin	Wilbur
Habecker, I. N.	Oregon

Name—	Last Known Address.
Hadley, F. B.	Madison, Wis.
Haggard, Finch	Seattle
Hammond, W. L.	B. A. I.
Harrington, D.	Sunnyside
Hart, W. G.	Tulare, Cal.
Harter, E. C.	Pullman
Hartnagel, O.	Seattle
Hauschild, T. B.	Kennewick
Hendrickson, Alfred	Burlington
Hess, O. B.	Washington, D. C.
Hickingbottom, R.	Seattle
Hjort, Carl	Stanwood
Howard, G. P.	St. Johns
Howard, J.	Bellingham
Huff, L. B.	B. A. I., Iowa
Husband, A. F.	British Columbia
Hutchinson, E. N.	Ferndale
Ickes, G. Z.	Palouse
Jackson, J. W.	Wenatchee
Jacquiss, W. A.	Seattle
Jarvis, D. W.	Sandpoint, Idaho
Johnson, B.	Spokane
Johnson, J. P.	Seattle
Johnson, Mark	Clarkston
Johnson, O. W.	Davenport
Johnson, P. H.	Colville
Johnson, W. J.	Ethel
Jones, C.	Yakima
Jones, G. A.	Sedro Woolley
Kalkus, J. W.	Pullman
Kellum, V. S.	Seattle
Kennedy, E. D.	Moscow, Idaho
Kennedy, H. F.	Newport
Keown, H.	Victoria
Knapp, H. S.	Seattle
Kydd, W. H.	Oregon
Knox, J. H.	
Langdon, W. C.	Waterville
Lee, H. C.	Spokane
LeMay, D.	Port Russell, Wyo.
Lloyd, T. J.	Port Angeles
Lull, F. C.	Ellensburg
MacIntosh, A. W.	British Columbia
Mackintosh, P.	Yakima
Martin, J. H.	Spokane
Mason, F. H.	Spokane
Mason, W. D.	Utah
Mast, R. P.	Idaho
Mawhinney, H.	Marcus
Menig, O.	Spokane
Miller, E. C.	Monroe
Miller, S. T.	Twisp
Miller, W. N.	Portland
Mitten, James	Puyallup
Minton, J. W.	Chehalis
Moffatt, S. J.	Kelso
Murray, J.	McMinnville, Ore.
McAllister, R. C.	Corvallis, Ore.
McBride, R.	Everett
McCoy, E. E.	

Name—	**Last Known Address.**
McCoy, J. H.	Colfax
McCoy, M. M.	B. A. I., Portland, Ore.
McKibbin, J. A.	Colfax
Naylor, R. C.	Spokane
Nelson, R. S.	Tonasket
Nelson, S. B.	Pullman
Nevel, B. E.	Oregon
Norman, C. T.	Goldendale
Nye, E. W.	Colfax
O'Donnell, M. J.	Mansfield
Oderkirk, C. C.	Almira
Oliver, K. M.	Seattle
Osado, T.	Seattle
Overhulse, G. F.	B A. I., Portland, Ore.
Patric, L. A.	Snohomish
Pauhlman, V. C.	Prosser
Pelton, L. C.	Olympia
Pfenning, H. E.	Ellensburg
Phillips, C. S.	Mount Vernon
Pickering, C. E.	California
Picking, C. F.	Vancouver, Wash.
Pike, F.	Spokane
Powell, A. J.	Lewiston, Idaho
Powell, E. T.	Idaho
Prior, Robt.	Yakima
Reeve, R. A.	Everson
Richards, W. R.	
Richmond, H. A.	Toppenish
Roberts, E. S.	Enumclaw
Robillard, A. J.	Seattle
Rogers, E. K.	Spokane
Root, G. F.	O'Brien
Ross, W. J.	Mansfield
Rothlisberger, L. H.	Colville
Rude, A. E.	Davenport
Sandwith, C. J.	Friday Harbor
Saperstein, A.	Ferndale
Schader, C. H.	Sunnyside
Schultz, C. H.	Chicago
Seely, J. T.	Seattle
Sheppard, G. F.	Wapato
Sheppard, J. N.	Wapato
Shuler, H. H.	Spokane
Smith, B. H.	Yakima
Smith, F. E.	Seattle
Staggs, Geo. W.	Weston, Ore.
Stewart, W. W.	Seattle
Stickney, L. G.	Toppenish
Stouder, R. W.	Manhattan, Kan.
Strandberg, C. A.	Monroe
Stratton, J. J.	Spokane
Stuart, G. E.	Spokane
Swingley, G. A.	Seattle
Thompson, J. C.	Pomeroy
Trippeer, H. A.	Walla Walla
Trotter, J. C	Rockford
Unbewust, G. A.	Harrington
Unrau, G.	Arlington
Vetterling, H. A.	Spokane
Weeks, H. S.	Elma

Name—	**Last Known Address.**
Wegner, E. E.	Pullman
Whitlow, E. T.	
Wilson, W.	Dayton
Woods, J. W.	Walla Walla
Woodside, J. H.	Redmond
Wright, C. C.	Independence, Ore.
Yates, G.	Seattle

PREDATORY ANIMALS.

**Hon. F. H. Gloyd,
Commissioner of Agriculture,
Olympia, Washington.**

Dear Sir: The result of the campaign against predatory wild animals in the State of Washington has met with the hearty approval of all stockmen with whom our trappers have come in contact.

The horseheaven country, in the southeastern part of the state, was a veritable coyote paradise until our hunters disturbed the tranquil life of the so-called "government dogs" there. Mr. J. A. Benson and Mr. R. E. Jackson, who run sheep in that section, have heartily indorsed the work of our trappers, and Mr. Benson states that they reduced the losses caused by coyotes from "several hundreds of dollars to almost nothing the past few years." Yakima County has always been badly infested with coyotes, but thanks to the efforts of our trappers in that section, they have been reduced fully 50 per cent of their former numbers. Down in Walla Walla County, it appears that coyotes from all the surrounding country like to visit the valley between Wallula and Touchet. A trapper there has done excellent work and has given the coyotes such a disturbing time that they are greatly reduced in numbers. Last spring, he located a litter of pups under a greasewood bush and that night trapped the mother, when it was found that both her front feet had been cut off by traps and the stubs healed over. This sounds cruel, but when it is taken into consideration that this one coyote had taken heavy toll in sheep and poultry and had been hunted and trapped for by amateur trappers for some time, no sympathy was expressed at her death. It is these wise old battle-scarred individual animals that cause the greater part of the stock losses in the state. Reports from former hunter, G. T. Rose, indicate that last year approximately $1,000 worth of sheep were killed by coyotes in western Stevens County. After two trappers worked in the county with traps and poison, this loss was practically eliminated. Forest Supervisor Reed, of the Colville National Forest, reported bear killing a large number of sheep in the forest. A trapper was dispatched to the scene and killed three large bears and a cougar. The sheep killings stopped at once. A trapper has been located near Vance, in Lewis County, for some time. Recently a number of trappers had to be dropped from the force on account of lack of sufficient funds. When this news reached Vance, both stockmen and poultry raisers got together and forwarded the inspector in charge a petition asking that the trapper be kept in the "Big Bottoms Country", where he had saved them hundreds of dollars in sheep, pigs and poultry. This trapper not only has killed a considerable number of coyotes and bobcats, but a large number of skunks as well. In Okonogan County, coyotes have been reduced to a very small percentage of their former numbers, sheep and poultry raising is more profitable there and game has increased wonderfully.

As stated before, the work of predatory animal eradication has met with the hearty approval of stockmen, poultry raisers and sportsmen, but the work is far from finished. With the small amount of funds available, it has been necessary to move trappers from one locality to another as the ranges are cleared. As a result, a few individuals are left, which restock the country in a remarkably short time. For instance, not long ago Mr. E. F.

Benson wrote that at one time we had the Rattle-snake Hills country practically freed of coyotes, but after the trappers had moved elsewhere, within two years his range was badly reinfested. This statement was soon proven. A trapper was sent to the section and succeeded in killing twenty-nine coyotes the first month.

The funds now available are entirely inadequate for the proper carrying on of this work. Now that we have the coyote population greatly decreased, it is only proper that even greater efforts should be put forth to entirely eliminate this pest from the state. With more funds, not only more experienced trappers could be employed, but organized poison campaigns could be carried on that would be of great benefit to all concerned. Several states have recognized the great savings gained by destroying predatory wild animals, and large sums have been authorized by state legislatures to be used in cooperation with the U. S. Biological Survey in the work. The following list of cooperating states, together with the amounts appropriated last year for predatory animal work, is interesting:

Arizona	$25,000
Colorado	25,000
Nevada	30,000
New Mexico	20,000
North Dakota	5,000
Oregon	5,000
Texas	55,000
Utah	100,000
Washington	17,000
	$282,000

From present indications, it would appear that several of these states will authorize the expenditure of even greater sums during the next two years.

The money appropriated by the last session of the Washington State Legislature for predatory animal control has been used in cooperation with the Federal Government, as shown in the following table:

MONTH	STATE FUNDS		FEDERAL FUNDS	
	Number of Men Employed	Salaries Paid	Number of Men Employed	Salaries Paid
1919—				
April	8	$880 84	16	$1,546 00
May	9	808 25	14	1,338 17
June	9	1,026 67	9	849 17
July	8	833 56	13	1,115 83
August	7	764 84	15	1,322 50
September	7	770 33	15	1,181 83
October	7	804 67	11	1,081 33
November	7	750 00	6	555 83
December	5	532 90	3	292 17
1920—				
January	4	485 64	4	355 17
February	5	540 55	4	347 50
March	5	496 29	5	525 33
April	5	630 00	7	727 51
May	1	82 74	12	1,146 84
June	....	....	10	1,196 67
July	5	630 89	4	396 67
August	5	640 65	5	446 66
September	5	627 33	8	686 67
October	6	600 65	6	563 50
	108	$11,906 80	167	$15,724 35

Amount of State Fund	$17,000 00
Balance on hand Nov. 1, 1920	5,093 20

In addition to the above, all expenditures for supervision, express of traps and other equipment, and field travel of inspectors, have been paid for from Federal funds. All traps and other equipment has been furnished by the government also.

The coyotes and other wild animals killed in the state of Washington by Federal and State hunters during the past five years, has resulted in the saving of several hundreds of thousand dollars, has met with the approval of stockmen and sportsmen, and has practically stamped out rabies in the state. To discontinue the work now would be fatal. We have the coyote on the run. The price of fur is way down, consequently the private trapper will seek other lines of work, so this means more work for state and government. Think it over.

STANLEY G. JEWITT,
Predatory Animal Inspector,
U. S. Biological Survey.

515 P. O. Bldg.,
Portland, Oregon.
November 12, 1920.

DIVISION OF HORTICULTURE.

Mr. F. H. Gloyd,
Commissioner of Agriculture
Olympia, Washington.

Dear Sir: In pursance of the requirements of the Horticultural Code enacted by the 1915 Session of the Washington State Legislature, I herein submit to you a summary of the administration of the division of the years 1918 and 1919, and a report of the activities as Chief of the Division.

The horticultural industry of Washington has forged to the front until the State stands among the foremost in the production of fruits and vegetables. In 1917 and 1919, it occupied first place in apple production. In 1918, New York was the only state showing a greater production of apples.

In the production of pears, it occupies second place, and in peach production, fourth place. The small fruit industry has increased in similar proportion. This growth has increased the demands for better pest control work, has created new demands for the prevention of the introduction of new insects and diseases. New marketing problems have constantly arisen, hence the work of the division is divided as follows:

(1) The pest control work, which checks the work of dangerous insects and diseases.

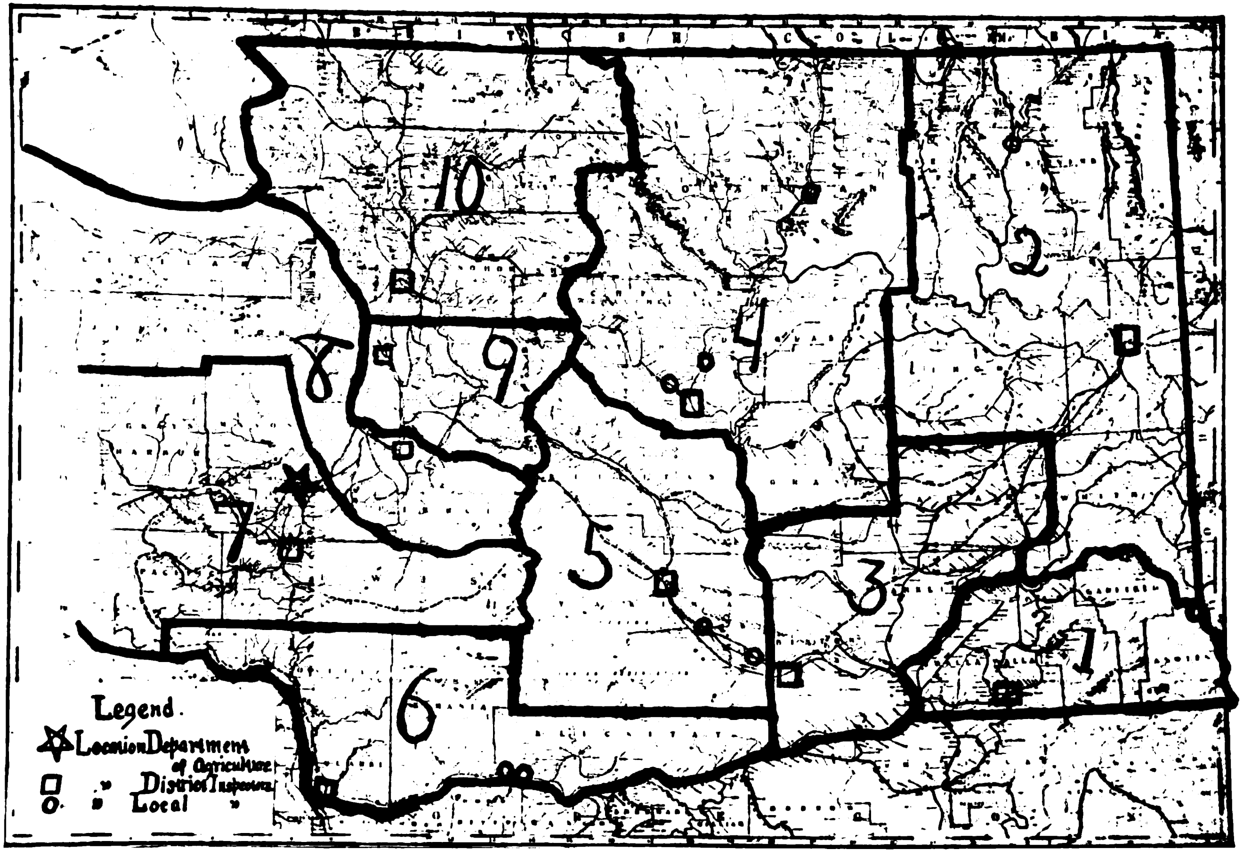
(2) Quarantine work is a service which prevents the introduction of new dangerous insects or diseases by preventing commodities coming through the regular avenues of trade from infested territory into the State of Washington.

(3) Standardization work, which helps to establish standard grades for all products placed upon the market, and a standard package or container for them to be marketed in.

The quarantine service, in operation in all of our ten district inspector's offices, makes these ports of entry into the state. We have two maritime ports of entry for foreign shipments, Seattle and Tacoma. At Seattle, close co-operation is carried on with the Federal Horticultural Board in the enforcement of Federal quarantines. For the past two years, the abnormal conditions which have prevailed in all avenues of trade, have placed new responsibilities upon all inspection officials in the execution of quarantine regulations.

The fact that no new insect nor disease has gained entrance into our orchards or fields in that time, proves the fact that the service has been equal to the requirements. With the annual shipments of potatoes from tuber moth infested fields, the efforts of shippers to get products into the state from alfalfa weevil infested territory, and not one case of infection having been recorded, is further evidence that the inspection service has been very efficient. Many new pests have been found on plants and plant products coming into the state, and destroyed, which if once established, would have caused an inestimateable damage.

The carrying out of such a program necessitates a large amount of orchard demonstrative work, of an educational character, showing the proper use of spraying apparatus, the correct mixture of materials and the way that they should be applied for the best results.



Horticultural Inspection Districts.

Crop estimates are made from time to time and published in the Monthly News Letter.

A census of the orchards and small fruit plantations is constantly being checked by the inspectors in the field, so that correct reports on acreage may be obtained. Disinfection and clean-up work necessitates a certain amount of police control, the same as is required in the proper enforcement of the state insecticide and fungicide law. A special inspection service is operated in connection with the admission of California grown potatoes into this state. and for the past five years, Mr. F. N. Rhodes, inspector at Seattle, has spent about five months yearly at California shipping points inspecting shipments destined for Washington.

The standardization work necessitates the inspection of orchards, packing houses, and all fruits and vegetables, after being packed for shipment, or during the process of packing.

The inspection of nurseries and nursery stock, the disinfection and, if necessary, the condemnation and destruction of infected stock, and the issuance of nurserymen's licenses.

The standardization work has been in the process of development for several years, and has now reached that degree of perfection that Washington grades of apples and other markings are known to the commercial trade the world over, and received as such. This is a great benefit to both the producer and consumer. It is an advertisement for the state's products that can not be excelled, and should be extended until every agricultural and horticultural product placed upon the market carries with it a standardized grade and pack. It is a common language between producer and consumer which can be used close at hand, or in the most distant avenues of the trade.

It aids in preventing the shipment of green, immature products, which always demoralize the markets. It establishes a quality standard which is the only way to check shippers from taking the advantage of high prices, which are always offered for the earliest products.

During 1919, pear, potato, and cantaloup grades were declared and promulgated, which proved to be of great benefit. The 1920 crop of potatoes, in some sections, will all be shipped under Washington State grades, which are nearly the same as the grades promulgated by the Federal Bureau of Markets.

At all times co-operative work with the Federal Bureau of Markets, the State College of Agriculture, and the State Marketing division, is carried on, in the fixing of grades, and the receipt and dissemination of information brought out by experimental investigation.

HORTICULTURAL DISTRICTS.

The State is divided into ten horticultural districts, each district has "**An inspector at large**," who is **district inspector**, and as many local inspectors as the appropriations for horticultural work in the various counties made by the county commissioners will warrant. As noted on the accompanying cut, District No. 1 is made up of the counties of Walla Walla, Columbia, Garfield, and Asotin. The district inspector is Elwin G. Wood. His office is in the court house at Walla Walla. E. G. Wood succeeded H. L. Miller as inspector, May 1st, 1919.

District No. 2 comprises the counties of Spokane, Whitman, Lincoln, Ferry, Stevens, and Pend Oreille. The district inspector is Mr. E. B. Kelley, located in the Columbia building, at Spokane. The size of this district is so great that it is impossible for the one district man to give it proper attention, and consequently, some interests and sections are neglected. Because of that fact, this district should be divided—Ferry, Stevens and Pend d'Oreille forming a district, with the office located at Colville. The increased inspection work caused by the more drastic pest control work in connection with the potato industry, as well as fruit growing, makes it imperative that more men be put in the field if the work is properly coped with. By segregating this territory from Spokane, Lincoln and Whitman Counties, Adams County could be added, which would make the territory much more condensed, and better located geographically, to be covered from the office point at Spokane.

District No. 3 is now comprised of Benton, Franklin and Adams Counties. F. E. Bailey is district inspector, his office being in the county office building at Prosser. Mr. Bailey succeeded Mr. Luke Powell, in July, 1919, who resigned to assume management of his individual orchard.

District No. 4 is made up of Chelan, Okanogan, Douglas and Grant Counties. P. S. Darlington is district inspector, and has his office in the Chelan County court house, at Wenatchee. This, and District No. 5 are the principal fruit producing sections in the state, which necessitates a large amount of inspection work, and better individual service could be rendered if Okanogan County was made a distinct district. District No. 5 is comprised of Yakima and Kittitas Counties. C. L. Robinson is district inspector, and has his office in the Yakima County court house. H. L. Miller succeeded C. B. Wood, who resigned after a short period, to accept a more remunerative position. His vacancy was filled by C. L. Robinson, July 1st, 1919. Because of the widely diversified interests in this district, including the different fruits,' potatoes, cantaloups, melons and vegetables, the inspection force is the most elaborate of any district in the state.

District No. 6 includes Wahkiakum, Cowlitz, Skamania, Clarke and Klickitat Counties. I. R. Fletcher is district inspector, and has his office at Vancouver, in the National Bank building. The boundaries of this district are such that it is impossible for one man to give proper attention to the entire territory, on account of transportation conveniences, and similarity of interests, Wahkiakum should be taken from this district and added to Pacific and Grays Harbor Counties, making another district. This territory would be accessible from some central point, and the horticultural interests of the entire territory would be similar.

District No. 7 comprises Lewis, Thurston, Mason, Pacific, and Grays Harbor counties. It is easy to see the benefit which it would be to take the two counties from this district and add to Wahkiakum for another district. Mr. Theo. Albert is the district inspector, and is officed by the courtesy of the Southwest Washington Fair Association, in their office in Chehalis. Mr. Albert succeeded Mr. E. F. Perry, December 1st, 1919, Mr. Perry having moved to California.

District No. 8, district inspector, Henry Huff, Sumner. This is another district which should be divided. It now comprises Pierce, Kitsap, Jefferson and Clallam Counties. The inconveniences of transportation facilities and road conditions, make it impossible for him to properly cover the entire territory more than once or twice a year.

The small fruit interests are so intensified in this district that they demand more attention. Jefferson and Clallam should be taken from this district, and by adding Island and San Juan Counties, a district could be formed, which by boat communication, would be much easier given proper attention.

District No. 9 is made up of King County alone. Mr. F. N. Rhodes is the district inspector, and is officed in the City-County building. This being a maritime port, makes the inspection work of great importance in protecting the state from the introduction of foreign pests. It is the largest distributing and receiving port in the state, and requires the constant service of two men, and at some seasons of the year, more men are necessary.

District No. 10. C. O. Weiss is inspector, and is located in the Commercial building, at Everett. Mr. Weiss took possession of this district May 1st, 1920, being the first inspector to give his entire attention to this district.

The district now is composed of Snohomish, Skagit, Whatcom, San Juan, and Island Counties. Transportation problems make it very undesirable to have all of these counties in this district. It necessitates the going to Seattle to get to the Island Counties, besides the territory is so extensive that it is impossible to give proper attention to it.

To Summarize.

Four new districts should be formed as suggested, if the best service is rendered. The rapid growth and development of the small fruit interests in these counties, make it imperative that more attention be given this territory, in order that the sections may be kept free from the invasions of the different pests.

The tree fruits are also demanding more care, better attention is being paid to clean-up work, which demands the attention of close, frequent inspection to see that the work is properly done, and done at the right time to get results. There are constantly new insects and diseases threatening the economic crops of the state. Closer attention must be given to quarantine work. We must have constant police control to keep the enemies from our boundaries. The introduction of any one of several pests which are to be found in other states, in a short time, would mean a damage to the state that could not be estimated by actual dollars and cents. Some states have spent millions of dollars in the control of a single pest. Every citizen of the state should endeavor to keep these enemies out of Washington.

County Inspectors.

There are two kinds of inspectors provided for by the Provisions of the Horticultural Law—the inspectors at large, or district inspectors, and the local or county inspectors.

Section 13, of the Horticultural Law, Chapter 166, Session Laws 1915, says: "It shall be the duty of the Board of County Commissioners of each County, at the time of making a regular tax levy in each year, to include a tax upon the taxable property of each county, in such an amount as they shall feel will produce funds sufficient to meet the expense of inspecting and disinfecting orchards, etc."

This, when complied with, furnishes a fund with which the local inspectors are employed. This fund is augmented by the aid of car-load inspection service fees, to the extent that is makes it possible to meet the demand for increased inspection service during the shipping season.

The district inspectors are located at county seats, as near the center of their districts as feasible, and direct the activities of the local inspectors in the districts. Each district inspector has as many local inspectors as the seasonable work demands, and funds permit. In some counties, the bulk of the work is done in connection with the potato crops. The counties, in some instances, appropriate only $250.00, which is to care for the inspection of incoming nursery work during the shipping seasons, while in some of the principal horticultural counties, the amounts vary and run as high as $16,000. Any excess funds which are not used are always diverted back to the county.

The list of counties making appropriations is as follows:

Asotin
Chelan
Clallam
Clark
Columbia
Douglas
Ferry
Franklin
Garfield
Grays Harbor
Jefferson
Kitsap
Kittitas
Klickitat
Lewis
Lincoln
Mason
Okanogan
Pierce
Skagit
Skamania
Snohomish
Spokane
Walla Walla
Whatcom
Yakima.

Adams, Cowlitz, Grant, Island, Pacific, Pend d'Oreille, San Juan, and Wahkiakum Counties are the ones which do not make appropriations for the care of their Horticultural interests. In Pacific County, is to be found the principal cranberry interests of the state, representing investments amounting to about one and one-half million dollars, which should be better protected, by horticultural inspection, to control the ravages of injurious pests, and prevent the introduction of new pests.

WEATHER.

The weather, in 1918, was seasonable during the entire year, but in December, 1919, a very unusually cold wave passed over the state, and in some sections, the low temperature severely injured many trees, killing others. Peaches and sweet cherries suffered the greatest loss.

In the Yakima and Snake River valleys, the peach crop was reduced to a minimum. The cherry crop was greatly reduced, and many trees which were not killed, were so reduced in vitality that the fruit did not make a normal development and prematurely ripened, when about three-quarters size.

The peach trees, which were not killed, made a more rapid recovery than did the sweet cherries. Many cherry trees seemed to withstand the weather with slight injury, but as the season advanced, they showed a weakened condition, and many died. Many others will fail to put out growth next season. Further comments are made in the notes by districts.

ORCHARD WORK.

The orchard work varies greatly according to the different parts of the state. In some sections, where the commercial orchard predominates, the orchard work consists largely of police work in connection with the control of the prevailing pests. In other parts of the state, the home orchard is much in evidence, and up-to-date orchard methods and care are sadly neglected. In these orchards, demonstrations of "How to prune" are given. The owners are told the proper spray solution to use to control existing insects or diseases, and shown the correct way of application.

For the past two years, the development in the small fruit sections has been rapid, and the area has been greatly increased. In this connection, much information has been given out pertaining to the proper selection of berry sites. The inspectors are frequently called upon to examine tracts of land as to the suitability for berry growing, and are asked for demonstrations in planting, cultivating, and general care of the plants.

The rapid increase in the small fruit areas has made a great demand for this kind of service, and it has been impossible for the inspection force to meet all calls.

The trying out of new methods and the testing of new spray materials has been one of the activities of the department for many years.

Melon and potato inspection makes new duties for the inspectors, and much information is given out in connection with vegetable growing in general.

Thorough spraying of the orchards at the right time, with the proper material, is the fundamental principle for efficient pest control.

To get this service properly done has been one of the most difficult tasks in connection with the regular orchard work.

In 1918, a plan was devised and put into operation in the Wenatchee district, which gave very satisfactory results. Single orchards which had become badly infested with codling moth or scab, had been handled under the direct charge and advisement of the inspectors, with satisfactory results. This demonstrated the fact that control could be obtained, and if a community could act as a unit, the same results could be secured as in single orchards. Hence, meetings were held, and the growers organized themselves into community units. This necessitated special inspection service involving added expense. To meet this condition, the growers voluntarily assessed themselves from 40c to $1.50 per acre, according to the acreage in the unit. This fund was collected and placed in the hands of the secretary of the organization, to be disbursed as needed. Any remaining unused part of the fund was held over for the next season's campaign. The units varied in size from 800 to 2,000 acres.

Best results were obtained in the units of about 1,400 acres. A careful census was taken of the units, showing exact acreage, number and kinds of trees, their condition, age, varieties, kind of equipment for spraying, and if inadequate, methods were worked out whereby sufficient spray outfits were made available so that every orchard could be sprayed at the proper time with the proper material, and in the proper way. A careful inspection of each tree was made, and if they were not sprayed correctly, the crew were recalled until it was properly done. With these plans, very satisfactory results were obtained. The details of the work will be found in the report for District No. 4.

DISTRICT NO. 1.

The year's work was begun and carried on until the first day of May, 1919, by Harry L. Miller. Then the office was turned over to the present incumbent, Elwin G. Wood, who has carried on the remainder of the work herein reported. Much valuable assistance has been rendered by Frank George, the local horticultural inspector for Walla Walla County, and Miss Pearl Tinsley should be mentioned for the efficient manner in which she has done the office work, thus making it possible for the district inspector to spend nearly all of his time in the field during the rush season.

Because of the topography of the country, the strip of orchards lying along the north bank of the Snake River, in Whitman County, is included in this district, and is reported herein as though it were part of Garfield County.

All statistics herein reported should be considered accurate. The fresh fruit and vegetable production has been obtained by consulting the books of the freight offices in the district, and the records of the shippers and shipping agencies. The data relating to by-products, nurseries, and storage facilities were gained by personal visits to all of the various plants.

Horticultural Conditions.

From the data obtained and from general observations, it is estimated that the apple crop was 90 per cent of normal, peaches, plums, prunes and apricots were 80 per cent, and sweet cherries 45 per cent normal. Potatoes were 40 per cent normal, onions and other vegetables 90 per cent normal. However, the onion acreage was above normal.

The loss in sweet cherries was due largely to lack of pollination, frost damage being negligible. The loss in other stone fruits was due to frost and red spider. With the exception of red spider, pests and diseases were not as troublesome as usual. Each pest and disease will be discussed separately.

Damage by Frosts.

Only slight damage was done in this district by frost. After March 26, there were three frosts at Walla Walla. On April 12, the temperature went down to 27 degrees, and on the 14th, to 28 degrees. Again, on May 4, it dropped to 29 degrees. Prunes were the main crop susceptible to damage by the first two frosts, but frost warnings were given out by the weather bureau, and most of the growers protected their crops by smudging. On May 4, there was no perceptible damage to orchards that were smudged, but in unsmudged orchards, 50 to 70 per cent of the fruit then on the trees was frosted.

There was also a loss of 50 to 85 per cent in a very few apple orchards in frosty locations. However, the set of fruit was heavy, and the effect on the ultimate yield was not serious. In Columbia County, Clarkston, and in the Snake River district, there was no appreciable amount of frost damage.

Damage by Insects.

Insect pests were less prevalent this year than last. No doubt, this was more or less a natural condition, but there is no question but that it was largely the result of a vigorous and effective spraying campaign.

San Jose Scale. At Touchet, the scale had not been bad in 1918, and most of the growers there did not spray last spring, with the result that approximately 20 per cent of the crop there was infested with scale. There was also quite an infestation of scale at Clarkston. However, the commercial orchards of the principal fruit producing sections in Walla Walla and Columbia Counties were so free from scaley fruit that the average loss was reduced to less than 5 per cent.

Codling Moth. The total loss from wormy apples did not exceed 3 per cent. Practically all commercial orchards were sprayed five times and some six. The fruit on unsprayed trees throughout the district was very wormy, which goes to show that it was the efficient spraying that saved the crop. The work done by this office with codling moth cages is reported in Bulletin No. 11.

Aphis. Little or no damage was done by aphis this year, and practically no spraying was done to keep them in control. Unquestionably, the large numbers of lady bird beetles stored and liberated by this department was the principal factor in their control. This work is reported in Bulletin No. 16, of this office.

Red Spider. Prunes and cherries dropped their foliage prematurely on account of red spider. There was a late drop of prunes amounting to 10 or 15 per cent of the crop, and it is reasonable to suppose that the severe infestation of red spider was the cause of it. Nothing was done to control red spider. A small spraying experiment was carried out by this office and is reported under "Work of the Office."

Peach Twig Borer was bad in some peach orchards.

Potato Beetles occurred at College Place, Russel Creek, Dixie, Dayton and the Snake River district. This will be further discussed under "Work of the Office."

Damage by Diseases.

The greatest loss from disease was caused by peach leaf curl. It was quite serious on susceptible varieties of peaches throughout the district.

It is probable that the dormant lime sulphur spray was applied too late to be effective for the peach leaf curl.

Apple Powdery Mildew was quite prevalent early in the season, but by harvest time, the damage done was not very apparent. However, there is no question but that the damage in some orchards was considerable and spraying should be practiced to control this disease.

Fire Blight was not especially virulent this season, and did but little damage.

Apple Scab occurs in some small orchards in Mill Creek Canyon, but has not been observed any place else in the district.

It is reported that brown rot occurred in the prunes in some orchards at College Place, but it was not seen by the fruit inspectors. A thorough investigation should be made at harvest time next year to determine whether this disease is becoming established here, and to what extent control measures should be adopted.

Rhizoctonia, black leg and other potato diseases were very prevalent and caused a loss of perhaps 50 per cent in the potato yield.

On the whole, the orchards of the district are in good condition. The general sentiment among the growers and their attitude toward the orchard industry and toward the state Department of Agriculture is very good. The growers have been untiring in their spraying campaign to control the San Jose scale and the codling moth, and have produced a remarkably clean crop of fruit this year. Almost without exception, they have co-operated with the fruit inspectors in an effort to put up a grade and pack of fruit that is a credit to the district. The principal criticisms to be made are these: First, in many orchards, the tops of the trees had not been thinned out sufficiently to produce the best grade and quality of fruit of which the trees are capable, but more and better pruning is being done this winter than last. However, the tendency this winter is to prune too heavily. There is too much heading back being done in bearing orchards by some growers. Second, in some orchards, the trees are too close to produce the best results, and the crowded condition should be relieved by removing part of the trees. However, some of the growers are beginning now to remove some of the fillers or to prune, with the idea in mind of removing them in another year or two. Third, very few growers thin their fruit. With the scarcity and high cost of labor, they do not believe that thinning would pay. As a result of these things, the grade of apples is not as high as it should be. However, these things have been brought to the attention of the growers by means of bulletins and by personal work among them, and a decided improvement is to be looked for the coming year. A few orchards have suffered from drouth, but wherever possible, irrigation systems are being improved and new ones installed, and there should be a greater abundance of irrigation water next year.

Some of the orchards are in alfalfa, but the majority of the apple orchards are under clean cultivation. There is no doubt that as irrigation facilities improve, more of the orchards will be seeded to alfalfa, as most of the growers realize the need of more humus in our orchard soils.

With the biggest crop of apples this district has ever produced, there was a decided lack of preparedness to handle it. In addition to the ordinary losses already discussed, there was a severe loss in the apple crop at harvest time, due directly to heavy winds, frost and snow about October 20, and a very cold wave early in December. Lack of storage facilities, a scarcity of apple boxes, insufficient refrigerator cars, with the early date on which the frost and snow arrived, combined to make the losses much heavier than they might otherwise have been had the growers been prepared to pick each variety of apples as fast as it was ripe enough. A total loss of one hundred carloads and the reduction of another one hundred carloads from first class apples to vinegar stock, is a conservative estimate of the damage done by the above causes.

During a period of eight days, from December 9, to December 16, 1919, the daily minimum temperature was below zero. The lowest temperature was reached on the 13th, when the mercury fell to -23 at Clarkston, -19 at Dayton, -21 in the city of Walla Walla, but -28½ just west of the town, -36 at Lowden, and -32 at Attalia. A table showing the December range of temperature follows at the close of the report.

During this period, and from December first to 20th, the trees were covered with a heavy coating of ice, which had formed on them during the last day of November and first day of December.

As a result of the severe weather, practically all fruit trees of all kinds were injured to a greater or less degree. The injury was manifest in the early spring by a discoloration in the cambium layer of the trunks and base of the limbs of the trees. As the season advanced, the discoloration disappeared in many of the trees, while in others that were more severely injured, a new cambium layer formed and new sap wood was laid down over the discolored wood beneath. Old prune trees, in the Blalock section, that just before blooming time in April, looked completely hopeless because of the cambium being black and looked entirely dead on the trunks and scaffold limbs, in June, looked healthy and showed a prospect of 40 per cent of a normal crop. A layer of new sap wood about a sixteenth of an inch in thickness has been laid down above the discolored wood, and the trees seem to be making a normal development, except that many of the lower limbs and twigs are entirely dead and dry. Still, other trees have remained sickly, making a very weak growth of foliage, which came out later than that on other trees of the same variety. Most of the peach trees developed a sickly growth of leaves, but by this time some trees look normal, while others are dead, or nearly so. Some apple trees, especially Rome Beauty, that had suffered for water during the summer, did not have strength enough to burst into leaf. Others leafed out normally and, in June, withered and died back from the tops. This is especially true of Stayman Winesap and Yellow Newtown trees. In many trees, certain large laterals died, while the rest of the tree remained normal.

There was a great deal of winter killing of spurs and twigs, especially in Rome Beauty trees. In most of the sweet cherry trees, the limbs died back and many of the cherries turned yellow and ripened prematurely. Dozens of the trees died. There are some dead prune trees, but on the whole, the prunes are coming out in pretty good shape.

Asotin County suffered the greatest loss because peaches and sweet cherries are grown most extensively there. However, the cherries did not suffer nearly so much as at Walla Walla. In Garfield County, most of the fruit is along the banks of the Snake River, and the damage is less than in other sections. Columbia County grows mostly apples, and the permanent loss is not so heavy. In Walla Walla County, the loss is heavy on peach trees, sweet cherries and prunes, and rather severe in some apple orchards.

Throughout the district, the prospect was brighter at blossoming time than three weeks later. The sweet cherry bloom was nearly normal. Apples and prunes showed 60 per cent of a normal bloom, but were reduced by an early June drop to 40 per cent of normal.

We have no check on the number of trees killed or injured, and it is still impossible to tell just what percentage will come back to normal condition in 1921.

The following table shows the maximum and minimum temperature in the different counties:

DATE	ASOTIN COUNTY		COLUMBIA COUNTY		WALLA WALLA COUNTY	
	Minimum Temperature -23 (Clarkston)		Minimum Temperature -19 (Dayton)		Minimum Temperature -28 (Blalock)	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
December 1	21	11	32	24	32	20
December 2	17	- 2	25	14	20	10
December 3	12	- 4	21	5	17	9
December 4	10	- 5	20	11	15	10
December 5	15	1	21	1	18	8
December 6	19	7	35	1	35	11
December 7	26	15	31	10	24	13
December 8	17	- 9	19	6	18	3
December 9	10	-11	9	- 4	11	0
December 10	14	9	9	5	10	7
December 11	15	0	9	- 5	8	- 2
December 12	2	-20	7	-15	5	-10
December 13	4	-23	1	-19	1	-14
December 14	8	-10	1	-19	2	-13
December 15	17	- 7	8	-14	6	-10
December 16	39	13	15	0	11	0
December 17	44	32	36	12	34	11
December 18	42	37	44	25	30	17
December 19	45	35	45	27	29	24
December 20	41	36	....	....	56	28

NOTE—Snake River, in Garfield and Whitman, not recorded.

DATE	WALLA WALLA	BLALOCK
	Ground Shelter Minimum	Minimum
December 8	....	- 1
December 9	....	- 8
December 10	....	- 2
December 11	....	- 4
December 12	-15	-22
December 13	-21	-28½
December 14	-17	-22
December 15	-14	-19
December 16	2	....

There is a notable lack of organization and co-operation among the growers of this district. The writer believes that, through organization and co-operation among the growers of the several localities, much could be done to solve the following problems: The labor situation could be surveyed in advance and provisions made to secure an adequate labor supply, with a uniform wage scale for the various kinds of orchard and packing house work. Arrangements could be made with saw mills and dealers, to supply enough

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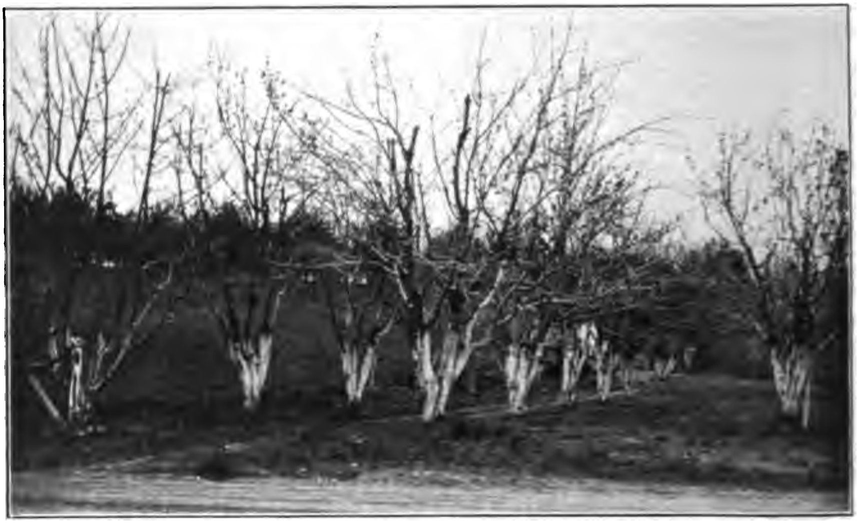

These trees show the results of pasturing hogs in "the apple orchard."

A strawberry field in Asotin county.

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box shooks early in the year, and thus avoid the recurrence of losses from a box shortage. Much could be done by co-operation in securing materials and labor for extending the storage facilities on individual farms, or in building community packing and storage houses. Many other things could be done along these lines.

Crop Reduction.

From table No. 1, exports of fruits and vegetables, we find that the production for car lot shipments from District No. 1, was 1,400 carloads of fruit and 962 carloads of vegetables. Of the 1,400 carloads of fruit, 1,176 were grown in the Walla Walla and Columbia Counties, and the 962 carloads of vegetables were produced in the imediate vicinity of the city of Walla Walla. Data on vegetable shipments from Clarkston and the Snake River are unobtainable. Correct data on large quantities of peaches and other stone fruits shipped from the Snake River section, especially from Clarkston, could not be secured. Neither have the fruit and vegetables used for home consumption been considered. However, adding 2,350 tons of apples, 95 tons of pears, 380 tons of cherries, 20 tons of plums and 400 tons of tomatoes used in the canning and by-products factories within the district, increases the production to about 1,520 carloads of fruit and 987 carloads of vegetables, without considering home consumption or express shipments of less than straight carloads.

Exports, Fruits and Vegetables.

The topography of this district divides it, naturally, into two sections. The Walla Walla valley includes the fruit-producing areas of Walla Walla and Columbia Counties, and the Snake River valley includes the principal fruit-producing areas of Garfield, Whitman and Asotin Counties. The Lewiston district, in Idaho, lies just across the river from Clarkston, the fruit section of Asotin County, and all of the fruit from Clarkston, as well as most of that from farther down the river, in Garfield and Whitman counties, is shipped from Lewiston. This makes it difficult to segregate the shipments of Washington grown fruit from those of Idaho grown fruit shipped out from the same stations. A similar condition exists on the state line between Walla Walla County and Oregon. It is difficult to segregate shipments of fruit produced in the state line section of Walla Walla County from those grown just across the line, and shipped out from the state line warehouses. However, the following table should be considered a correct statement of the shipments of Washington grown fruit and vegetables from District No. 1. It shows the shipments from each of the above geographical districts and the totals for the entire district. The shipments are given in actual carloads. On account of the shortage of refrigerator cars, they were loaded heavy, and the average is well above the standard carload for the product reported.

Potato Beetle Eradication Campaign.

In 1918, potato beetles did considerable damage to the fields in College Place and Blalock garden tracts. A spraying campaign was inaugurated, and the bugs pretty well cleaned out. However, they appeared in a number of fields again in 1919. As soon as the first beetles appeared, a careful survey was made of all the potato patches in College Place district and wherever bugs were found, the growers were notified to spray and given instruction on how to do so. Four garden spray outfits were furnished by the Walla Walla Gardners Association and one by the county. These sprayers were loaned to the gardners whose fields were found to be infested. The county inspector watched carefully for any new infestations, and looked after the loaning of the spray pumps. It is believed that in this manner the potato beetles were entirely eradicated in that locality.

An infestation was found in one potato patch in the Russell Creek neighborhood, and cleaned out by spraying.

There was quite a general infestation of bugs in the fields at Dixie and in the Dry Creek neighborhood. A pump was placed at the Cash Mercantile Store at Dixie, for the use of those having infested potato patches, and all but two or three small patches were sprayed. The writer believes that, with several weeks of systematic work in each of the localities where potato bugs are found, this pest can be entirely eradicated from the fields of this district.

State and County Fair Work.

The writer was appointed by the County Fair Board as superintendent of the Horticultural Department of the County Fair. Previous to the date of the Fair, a considerable amount of time was spent by Frank George, the Walla Walla County inspector, in creating an interest in the Fair and getting the various communities to compete with community exhibits. During Fair week, we fixed up a State Department of Agriculture booth in the horticultural exhibit rooms, and the whole force was kept very busy with the exhibits there. On the day that the County Fair closed, the best of the material there was taken to make a county exhibit at the State Fair at Yakima. A creditable showing was made, and with the exception of four or five dollars, the entire expense of making the exhibit was paid from the premium money awarded to the exhibit.

The output of District No. 1, is as follows:

[illegible]

DISTRICT 1.

Shipments of Fresh Fruit and Vegetables (In Carloads).

YEAR	Apples	Peaches	Pears	Plums & Prunes	Cherries	Apricots	Grapes	Mixed Fruits	Potatoes
1919	176	104	19	162	77	6	10	9	43
1920	907	51	13	270	95	8	2	137	41
Totals	1,083	155	32	432	172	14	12	146	84

YEAR	Onions	Cabbage	Rhubarb	Carrots	Spinach	Asparagus	Tomatoes	Table Beets	Parsnips
1919	516	....	67	....	26	9	26	....	....
1920	616	27	60	17	28	25	13	5	3
Totals	1,132	27	127	17	54	34	39	5	3

Total—1919	1,250
Total—1920	2,318
Total	3,568

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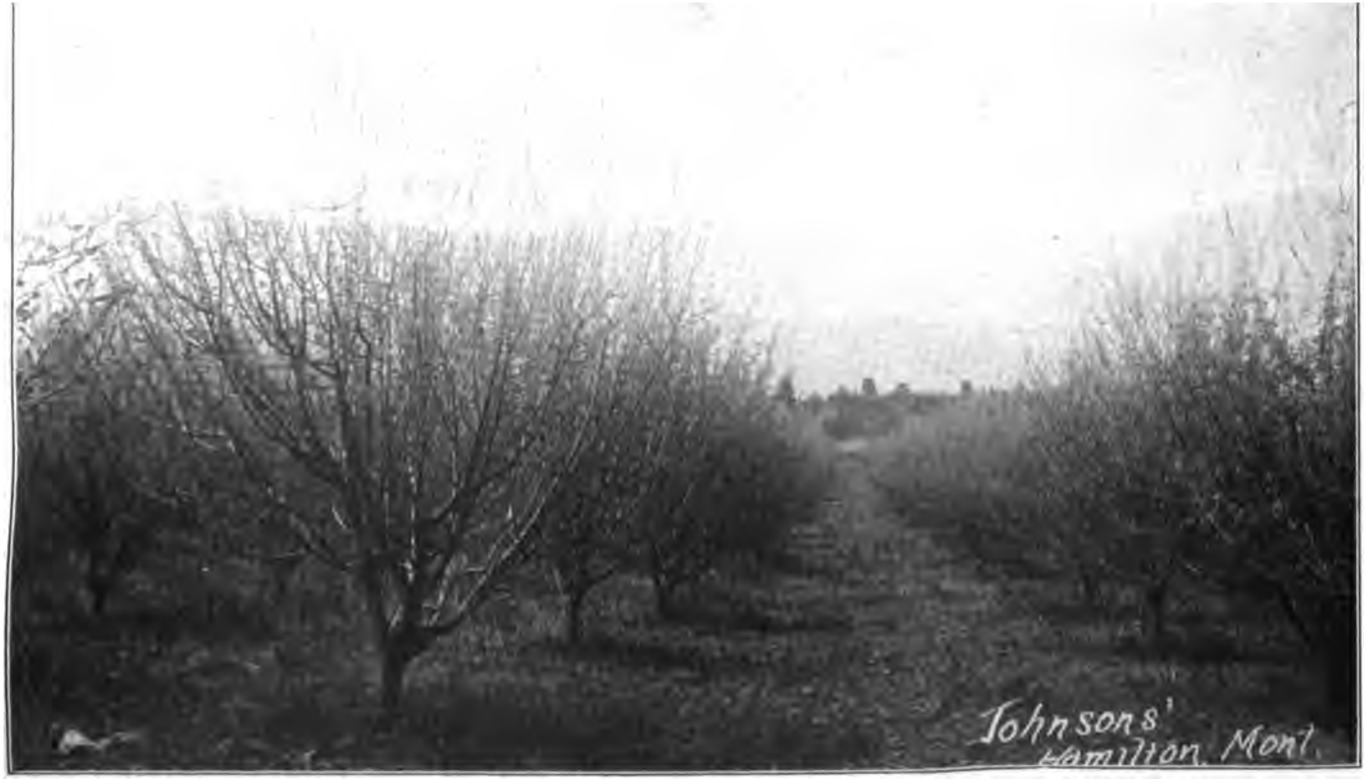


An orchard defoliated by the leaf-roller.

Fruit Storage Capacity (In Boxes).

YEAR	Number of Houses	KIND OF STORAGE			Totals
		Common	Frost-Proof	Iced	
1919	19	175,392	45,360	85,428	306,180
1920	13	142,000	76,000	....	218,000

Greenhouse Report.

YEAR	No. of Houses	Assessed Valuation	Square Feet of Glass	Volume of Business
1919	8	$68,185 00	220,850	$72,845 00
1920	9	70,635 00	221,180	101,900 00

Spraying Materials Used.

YEAR	Lime Sulphur Solution, Bbls.	Arsenate of Lead, Dry, Lbs.	Number of Spray Machines	OIL		Calcium Arsenate, Lbs.	Magnesium Arsenate, Lbs.
				Dormant	Distillate Emulsion, Gals.		
1919	2,920	89,000	86	....	5	50	150
1920	2,920	89,000	100	....	....	....	....
Totals	5,840	178,000	186	....	5	50	150

DISTRICT No. 2.

E. B. Kelley, district inspector, reports that in the vicinity of Spokane, seven frosts, in the spring of 1918, reduced the crop perceptibly by injury to the buds at blossoming time. The December freeze of 1919, damaged fruit which had not been harvested or placed in storage, but the trees were not seriously injured.

In the spring of 1920, smudge pots were used in the Arcadia orchards at Deep Park, at blossoming time, with very satisfactory results.

In the vicinity of Spokane, is to be found a serious infestation of the apple leaf roller. The pest has been known to have been in the orchards of that section for several years, but had not, previously to 1918, caused any damage to trees or fruit. In 1919, the damage was very noticeable, and some dormant spraying was done in the Spring of 1920.

This season (1920), the loss from the result of the activities of the pest varied in different orchards, ranging as high as 80 per cent in some instances. It attacked and destroyed the blossoms in some orchards, and in others, attacked the apples, which left them as culls. A concerted action is being pushed toward community organizations for the purpose of urging a mutual effort in the application of a dormant oil spray to the trees in the whole infested territory. The Entomological Division of the State College at Pullman, and the Farm Bureau of Spokane County, are rendering their valuable assistance in this campaign. The County Commissioners of Spokane County made a special appropriation for this clean-up work. The growers will furnish an equal amount, which will create a fund with which a systematic, thorough campaign can be carried out.

In the Stevens County fruit sections, during the past two years, there has been a great increase in the attention given to pest control work. More up-to-date spray outfits were purchased in the spring of 1920, than had been previously owned by the orchardists. Similar conditions prevail at Peach, which is the principal fruit section in Lincoln County. In the whole district, 113 new power spray outfits were purchased during the Springs of 1919 and 1920.

The orchard census in this district, as checked up to date, shows a total of 21,333 acres of commercial orchards, in Ferry, Lincoln, Stevens, and Spokane Counties, after eliminating the undesirable, neglected territory. The orchards of Whitman County are located on the north bank of the Snake River, and the most of the work has been looked after by the inspector from the second district because of the close proximity to his territory.

DISTRICT 2.

Shipments of Fresh Fruit and Vegetables (In Carloads).

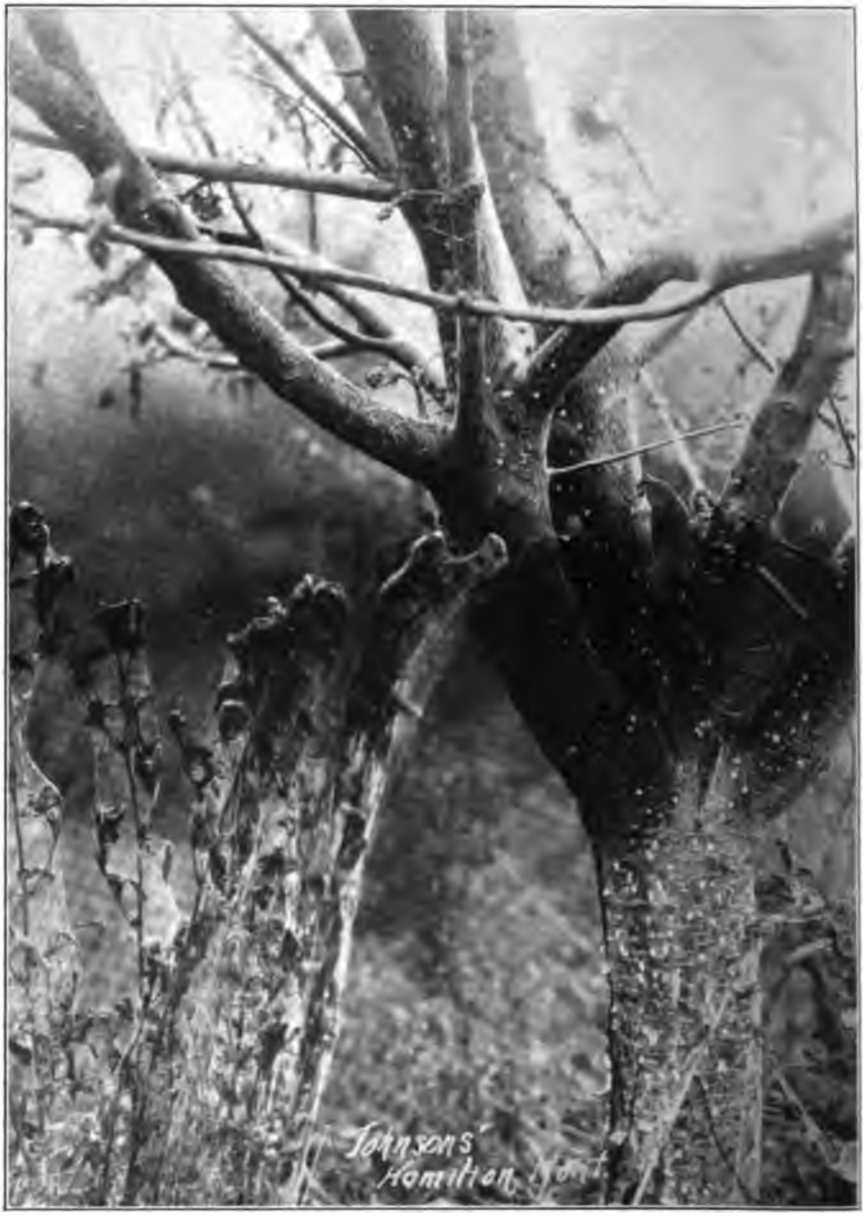
YEAR	Apples	Peaches	Pears	Plums & Prunes	Cherries	Apricots	Mixed Fruits	Potatoes	Totals
1919................	1,282	....	7	1	....	....	39	....	1,329
1920................	1,668	60	15	87	2	1	114	201	2,148
Totals........	2,950	60	22	88	2	1	153	201	3,477

Fruits and Vegetables Used in Manufacture of By-Products (In Tons Fresh Fruit).

YEAR	Apples	Pears	Plums & Prunes	Cherries	Small Fruits	Tomatoes	Vegetables	Totals
1919..........................	7,170	74	1¼	164	15	473	209½	8,106¾
1920..........................	5,680	....	....	....	....	....	....	5,680
Totals.................	12,850	74	1¼	164	15	473	209½	13,786¾

Fruit Storage Capacity (In Boxes).

YEAR	Number of Houses	KIND OF STORAGE			Totals
		Common	Frost-Proof	Iced	
1919..................................	17	381,727	626,099	94,500	1,102,326
1920..................................	24	475,947	946,387	94,500	1,516,834



Apple tree defoliated by the Leaf Roller. The white spots are egg clusters. Webs on alfalfa show them working on it after defoliating the tree.

Greenhouse Report.

YEAR	No. of Houses	Assessed Valuation	Square Feet of Glass	Volume of Business
1919	19	$71,914 00	299,200	$134,960 00
1920	15	65,216 00	282,570	142,805 00

Spray Materials Used.

YEAR	LIME SULPHUR		ARSENATE OF LEAD		OIL		Nicotine Sulphate, Lbs.	Number of Spray Machines Used
	Dry, Lbs.	Solution, Bbls.	Dry, Lbs.	Paste, Lbs.	Dormant, Bbls.	Distillate Emulsion, Bbls.		
1919	250							180
1920	250				800			293
Totals	500				800			473

DISTRICT NO. 3.

F. E. Bailey, district inspector of District No. 3, reports as follows on the effects of the weather during the last of November, and the month of December, 1919, on the various fruits in his district:

On the 27th day of November, 1919, the thermometer dropped below the freezing point in Benton County. From that day, until December 20, a freezing temperature prevailed continuously. The daily temperature dropped steadily during the first part of December, reaching the minimum for the winter on December 12, and 13. The minimum temperatures at different points were as follows: Prosser, -31 degrees F.; Kennewick, -26 degrees F.; Hanford, -27 degrees F. For three entire days the temperature remained below zero.

During this period of extreme cold, the ground was protected by a four to ten inch blanket of snow. The sky was clear.

Mild winter weather prevailed from the latter part of December until Spring.

Effect of Winter on Apples.

It is well to state, before discussing the effects of winter on any of the fruits, that conditions and results vary greatly from orchard to orchard, and that all statements must, necessarily, be generalities.

The effect of the cold on the apple trees was first noticed by the writer about the middle of January.

The cambium layer on the trunk, just above where the snow-line had been, was reddish-brown to dark brown. The discoloration was found to disappear as the examination was carried up the trunk and onto the branches.

In the majority of cases, the discoloration was worst on the southwest side of the trunk, although the northwest side showed up in bad condition where the prevailing wind, during the cold weather, had been from that direction. Usually, the discoloration was present only on one side of the trunk, but it was not uncommon to find it extending entirely around. Examination of buds and young wood, at this time, failed to disclose any evident signs of injury.

A few days following the discovery of the cambium discoloration, the bark on the trunks of some injured trees was observed to be loosening from the wood, over limited areas. From this time, until the close of the dormant period, very little change was noted.

With the opening of Spring and start of sap flow, the injured trees started leafing out. An excellent set of blossom buds became evident. About this time, light brown blistered areas appeared on the bark of the trunks, which had shown severe discoloration. As these blisters, or frost cankers, became older, the outer, paper-like thickness of bark became entirely loose from the tissue beneath. This outer bark could be lifted off with the fingers, disclosing a greasy, spongy stratum of tumorous green tissue. This green stratum was readily scraped away with the finger nail or knife blade. Under it was the badly discolored inner bark. This inner bark of the cankers and the underlying cambium is entirely dead at the present time.

In a few cases, the bark, which gave sign of loosening during winter, has split. Usually, it has remained intact, but partly loose from the wood, resulting in either a dried out, dead air space, or a cavity filled with sour sap.

Injury on the branches has resulted in cankers, which are less severe than those of the trunk, and which the tree can readily outgrow. Longitudinal splits in the outer bark are frequent marks of injury on the branches.

Anyone viewing the tops of the trees during the early part of the blooming period would have forecasted a very good crop, but before the calyx spray was started, a change in conditions became apparent. The blossoms began to shrivel and drop in great quantities. The force of the calyx spray removed many more blossoms.

The writer attributes the fall of blossoms chiefly to a reduction of bud vitality, due to the cold winter. Others claim that it is due to the scarcity of bees and insects for proper pollination.

About ten days to two weeks after starting to leaf out, many branches, and often entire trees, showed arrested development of foliage. At the present time, these branches have quarter to half grown foliage of pale color and drouth-stricken appearance. A tree may have one or more branches showing affected foliage with the balance of the tree showing normal foliage.

In most cases, foliage stunted limbs are associated with trunk cankers, on the same side of the tree, but there are many exceptions where one condition is present without the other.

Many injured trees are throwing out an abundance of sprouts in the region of the main fork, in a manner similar to that resulting from a severe pruning of the top.

The writer's observations lead him to believe that seventy-five per cent of the winter injury can be attributed to trees passing into winter with immature wood, due to late watering or being located on subirrigated soil. Drouth, poor soil and other vitality reducing factors were responsible for winter causing severe injury in the remaining twenty-five per cent of the trees.

It is also well to note that practically all fall and winter varieties suffered in one locality or another. Early summer varieties show a minimum amount of injury.

The crop is so badly scattered and spotted that accurate estimates are impossible to get, but one is safe in placing the estimate for all varieties at forty-five per cent of normal.

Pears.

Bartlett and Comice pears suffered extensively. Winter Nelis and Anjou pears escaped with light injury.

Pear injury showed up in January as a blackening of the sap wood. Unlike the apple, the discoloration was found in all parts above the snow line and was frequently worst in the younger wood.

Again, unlike the apple, much of the discoloration began disappearing with the advent of the sap flow, and the majority of the trees are coming through with a minimum amount of dead branches and trunk cankers.

Peaches.

Practically all peach wood showed much discoloration during late winter months. The trees were very slow in leafing out during the spring. Some orchards developed a good cover of foliage and are apparently coming through the winter in good shape. Other orchards show a scattering of leaves, and it is doubtful whether they can be restored to profitable bearing. A small per cent were practically killed outright. The writer estimates that the peach acreage of the county has been reduced about one third.

There will be no commercial peach crop this year.

Apricots.

Apricots were affected much as peaches. Some trees passed through the winter in excellent condition. Others, and often young, vigorous trees, were killed outright, or had part of the branches killed.

Unfavorable conditions of air and soil will account for some of the worst cases of peach and apricot injury. There will be no apricot crop.

Sweet Cherries.

The first examination of sweet cherry trees in January, showed much discoloration of inner bark, cambium and sapwood. On the trunk, the bark appeared as though it might later separate from the wood. Examination of fruit buds, at this time, showed a sixty per cent mortality.

Little change in condition was observed until the start of sap flow, when the bark in the discolored areas was observed to be reuniting very rapidly and new layers of wood and bark were laid down more rapidly than in any other fruit.

Practically all branches started to leaf out, and some of the trees threw out and set a heavy bloom. About four days after the close of the blooming period, the upper and outer extremities of branches began to wilt. This wilting and arrest in fruit and foliage development continued to proceed down the branches for about eight days, when it stopped as quickly as it began.

New and vigorous sprouts immediately began to appear just below the wilted area. Apparently the extent of the winter die-back in the cherries is now definitely marked out.

Of three commercial sweet cherry varieties grown here, Bing and Napoleon suffered most; Lambert, the least.

Many of the pollenizer varieties withstood winter quite successfully and will bear the only fruit in some sweet cherry orchards.

The sweet cherry crop will be about twenty per cent normal.

Sour Cherries.

Sour cherry injury is practically negligible.

Plums and Prunes.

Injury to these crops is slight.

Persian Walnuts.

Persian or English walnuts did not leaf out this spring. About June 1, the writer observed some trees which were throwing out buds in the region of the main forks.

American Grapes.

American types of grapes withstood winter with a negligible amount of injury in the young cane tips.

European Grapes.

Around Kennewick, where most or these grapes are grown on trellises and wintered without protection, they were killed to the snow line. Within the past three weeks, buds are breaking just above the ground, which may develop canes for next year.

At Hanford and White Bluffs, the stool, or short pruning system of California, is practiced. The vines are mounded over with earth during the winter. While these vines suffered some, they will yield seventy per cent of a crop. It is interesting to note that some of these mounded vines which had the aditional protection of a packing shed on the southwest corner of the vineyard, came through winter one hundred per cent good.

Cane Fruits.

Practically all exposed canes were killed to the ground, but new canes are growing in abundance.

Strawberries.

Strawberries were protected by the snow blanket, and did not suffer to any appreciable extent.

TEMPERATURE RECORD.—DECEMBER, 1919.

DATE	PROSSER		HANFORD	KENNEWICK	
	Maximum	Minimum	Character of Day	Maximum	Minimum
December 1	30	27	Cloudy	29	11
December 2	30	12	Clear	23	0
December 3	25	6	Clear	24	0
December 4	25	4	Clear	24	- 2
December 5	21	3¾	Clear	19	- 2
December 6	23	8	Pt. Cldy.	25	- 7
December 7	32	11	Clear	26	-14
December 8	28	10	Pt. Cldy.	24	- 3
December 9	12	5	Cloudy	12	-10
December 10	13	9	Cloudy	12	- 9
December 11	17	7¼	Cloudy	13	-26
December 12	4	-29½	Clear	- 0	-27
December 13	- 1	31	Clear	- 3	-23
December 14	2	-24	Clear	- 8	-10
December 15	7	-17	Cloudy	3	- 0
December 16	16	- 4	Cloudy	18	3
December 17	23	2	Cloudy	22	11
December 18	30	15	Cloudy	30	20
December 19	30	20	Cloudy	33	25
December 20	41	25	Cloudy	37	32
December 21	38	30	Cloudy	46	32
December 22	40	33	Cloudy	43	32
December 23	54	30	Cloudy	40	33
December 24	51	33	Cloudy	55	30
December 25	51	26	Clear	50	30
December 26	46	29	Clear	50	29
December 27	52	27	Pt. Cldy.	44	28
December 28	44	26	Cloudy	36	33
December 29	34	32	Cloudy	36	31
December 30	42	28	Cloudy	44	24
December 31	42	23	Pt. Cldy.	42	20

The following tables give the detailed information:

DISTRICT 3.

Shipments of Fresh Fruit and Vegetables (In Carloads).

YEAR	Apples	Peaches	Pears	Plums and Prunes	Cherries	Apricots	Grapes	Strawberries	Cantaloupes	Mixed Fruits	Potatoes	Onions	Egg Plant	Asparagus	Tomatoes	Watermelon	Mixed Vegetables	Totals
1919	655	7	145	7½	4	....	17	30	10	4	24	1	6	6	1½	20	3	941
1920	1,728	330	261	15	30	5	36	42	8	....	54	1	10	7	1	1	3	2,532
Totals	2,383	337	406	22½	34	5	53	72	18	4	78	2	16	13	2½	21	6	3,473

Fruits and Vegetables Used in Manufacture of By-Products (In Tons Fresh Fruit).

YEAR	Apples	Grapes	Totals
1919	780	150	930
1920	1,380	425	1,805
Totals	2,160	575	2,735

Fruit Storage Capacity (In Boxes).

YEAR	Number of Houses	KIND OF STORAGE			Totals
		Common	Frost-Proof	Iced	
1919	26	181,000	267,000	18,000	466,000
1920	28	181,000	267,000	71,000	519,000

Greenhouses.

YEAR	No. of Houses	Assessed Valuation	Square Feet of Glass	Volume of Business
1919	3	$1,350 00	2,865	$1,600 00
1920	3	1,350 00	2,865	1,800 00

Spray Materials Used.

YEAR	LIME SULPHUR		ARSENATE OF LEAD		OIL		Black Leaf 40 (Nicotine Sulphate), Lbs.	No. of Spray Machines	Sulphur for Spray, Lbs.
	Dry, Lbs.	Solution, Bbls.	Dry, Lbs.	Paste, Lbs.	Dormant, Bbls.	Distillate Emulsion, Bbls.			
1919	17,000	1,655	180,000	....	....	....	2,500	120	40,000
1920	12,000	1,800	195,000	....	....	....	2,700	150	30,000
Totals	29,000	3,455	375,000	....	....	....	5,200	270	70,000

DISTRICT NO. 4.

The biennial period ending July 1, 1920, has been a period of prosperity and progress in the horticultural industries of this district. Prosperity has been due largely to the profitable prices that the growers have been able to obtain for their fruit. But wonderful progress has been made in different directions, such as increased fruit production, more and better fruit storage facilities, more and better spraying equipment, also a largely increased use of insecticides and fungicides, with a resultant higher percentage of clean fruit.

Up until 1918, the largest fruit crop ever produced in this district was 8,232 cars of all kinds of fruit. In 1918 there was a production of 9,578 cars of all kinds of fruit, and in 1919, the total production was 13,621 cars.

While there has been considerable progress in more and better fruit storage-house construction in the past two years, still it is a regretable fact that fruit storage-house construction has not kept pace with the increased production, and especially is this true in the matter of cold storage in which line there has been no new construction. There are at this time, July 1, 1920, however, two new cold storage plants under construction, one at Wenatchee, to have a capacity of 300,000 boxes, and one at Peshastin, to have a capacity of 200,000 boxes. The Wenatchee district took more or less serious loss in 1919 because of the lack of proper storage facilities, coupled with a condition of an acute car shortage.

Pest Control.

That more and better spraying has been done and consequently that better pest control has resulted is evidenced by the fact that more than 500 new power sprayers were sold to the growers in 1919, and approximately 400 more in the spring of 1920. This is further evidenced by the fact that there has been a large increase in the use of the regular standard spray materials, as indicated by the accompanying table.

In 1918 Sunnyslope was the wormiest community in the whole Wenatchee district. This community shipped that year about 400 cars of apples. The damage done by worms was estimated at 20 per cent of the entire crop, which amounted to a loss of about 80 carloads of apples, or a loss in money of about $100,000.00. Such a loss as this has an effect on the growers similar to the effect of the loss of a great battle on an army. It hurts the morale. It has a tendency to make the grower skeptical and to lose confidence in himself and tried methods of codling moth control. Fortunately, however, we had one good example on Sunnyslope in 1918. During the winter of 1917-18 a certain grower on Sunnyslope asked me if there was anything he could do to get rid of the worms. He felt that he had done everything that he could possibly do, but still had suffered a loss from worms of 35 per cent for three years straight running. He was becoming discouraged. I promised to give him some special attention during the season of 1918 and see if we could not help him get rid of his worms. His orchard lay on three different slopes. We made it a point to determine spray dates for these different slopes and made it a point to be present each time he sprayed to see that his equipment was right and that the spraying was properly done. The consequence was that in 1918, when all of Sunnyslope averaged 20 per cent worm infestation, this man had just 1½ per cent worm infestation.

In the spring of 1919 I called a meeting of growers on Sunnyslope for the purpose of discussing the codling moth situation. I emphasized to those growers the fact that the codling moth could be controlled and cited the example of this one particular grower, who was present at the meeting, to substantiate my statements. I explained to those growers that if, by giving one grower special attention straight through the season, we could help him reduce his worm infestation from 35 to 1½ per cent in a year like 1918, I could see no reason why, if we gave each individual in the community the same special attention and could get each of them to give us the same cooperation, we could not materially reduce the worm infestation of the whole community. However, there were not sufficient funds available for that kind of service, and if the growers wanted that kind of service it would be necessary to raise the funds in the community. It seemed to me that if we could put a man in that community to give each grower in the community special attention and would be able to reduce the infestation even from 20 per cent down to 19 per cent, that it would pay the salary and expenses of the man several times over, and I felt confident that a very much greater reduction than that could be made. At this meeting the Sunnyslope growers voted to assess themselves $1.00 per acre for the purpose of putting on this extra man, and appointed a committee to collect the funds. The funds were collected and the special man was put on.

Each grower was checked up as to acreage to cover and equipment with which to do it. If the equipment was not right, or was insufficient, he was advised to get the necessary equipment, and in most cases followed the advice. Spray dates were determined and each grower was checked up upon his methods of application. Special attention was given to each individual straight through the season. Special attention was given to thinning and picking off what first brood worms got by the early sprays.

The consequence is that Sunnyslope, in 1919, instead of being the wormiest section in the district, is the cleanest of all the old infested areas. Worm infestation on Sunnyslope will not exceed 2 per cent for the whole community. There are a number of orchards in this section that will have scarcely a perceptible portion of 1 per cent infestation this year, and I do not know of a single orchard in the community that will exceed 5 per cent.

These growers are well pleased with the result, and while I have not made a careful canvass of the situation, a number of the growers have voluntarily told me that they want the service again next year.

Now, my idea is this: If we can reduce a whole community of 1,400 acres from 20 per cent to less than 2 per cent infestation the first year, I am confident enough to believe that if we can carry the work on next year under the same conditions, we can reduce the worm infestation on Sunnyslope to a very small focus; and, perhaps, in the course of two or three years, practically exterminate the moth in this area. Such a thing is possible. British Columbia has proven, and is proving, that it can be done. Is it worth trying? I'll say it is, even if we never reach the goal.

Let us see if this work, as far as we have gone, has been profitable to Sunnyslope. As stated above, Sunnyslope took a loss of 20 per cent on a 400 carload crop, which amounted to a loss in money of about $100,000. In 1919, the loss was reduced to 2 per cent, or a gain of 18 per cent over 1918. Sunnyslope produced this year 750 carloads of apples, and 18 per cent gain on 750 cars of apples will amount to about $200,000. Figure it out.

Fruit Products.

Since the production of this district is confined very largely to late summer and fall fruits and especially to winter apples and the principal source of waste has been cull apples, our by-product industries are therefore being developed mostly along the line of apple products from cull apples and low-grade apples. In 1918 a cannery was in operation at Olds Station. This cannery was discontinued in 1919. Below is a table showing the materials and the amount in tons manufactured into by-products in 1918 and 1919, together with other information pertaining to this district:

DISTRICT 4.

Shipments of Fresh Fruit and Vegetables (In Carloads).

YEAR	Apples	Peaches	Pears	Plums & Prunes	Cherries	Apricots	Grapes	Mixed Fruits	Vegetables	Totals
1919	7,908	216	414	11	85	40	....	766	621	10,061
1920	12,476	378	471	75	75	142	4	....	....	13,621
Totals	20,384	594	885	86	160	182	4	766	621	23,682

Fruits and Vegetables Used in Manufacture of By-Products (In Tons Fresh Fruit).

YEAR	Apples	Pears	Peaches	Plums & Prunes	Cherries	Apricots	Vegetables	Totals
1919	5,264	150	90	4½	50	20	150	5,728½
1920	12,347	....	....	....	....	....	....	12,347
Totals	17,611	150	90	4½	50	20	150	18,075½

Fruit Storage Capacity (In Boxes).

YEAR	Number of Houses	KIND OF STORAGE			Totals
		Common	Frost-Proof	Iced	
1919	38	288,950	1,086,770	108,200	1,423,920
1920	....	728,950	1,086,700	608,200	2,423,850

Greenhouses.

YEAR	No. of Houses	Assessed Valuation	Square Feet of Glass	Volume of Business
1919	....	$5,050 00	30,000	$27,784 20
1920	....	5,050 00	30,000	45,047 00

Spray Materials Used.

YEAR	LIME SULPHUR		ARSENATE OF LEAD		OIL		Nicotine Sulphate, Lbs.	Number of Spray Machines Used
	Dry, Lbs.	Solution, Bbls.	Dry, Lbs.	Paste, Lbs.	Dormant, Bbls.	Distillate Emulsion, Bbls.		
1919	110,000	5,500	751,708	171,137	60	15	3,400	* 500
1920	145,000	8,708	765,000	120,000	40	98	4,000	400
Totals	255,000	14,208	1,516,708	291,137	100	113	7,400	900

* New.

Fertilizers (In Tons).

YEAR	Nitrate of Soda, Tons	Clark Special, Tons	Beams Brand, Tons	Sheep Manure, Tons
1920	850	270	80	400

AVERAGE BEARING PER TREE PER YEAR.

DISTRICT	Apples, Boxes	Pears, Boxes	Peaches, Boxes	Plums & Prunes, Lbs.	Cherries, Lbs.
Yakima (average of 6 years)	8.31	1.9	6.19	96.04	75.85
Wenatchee (average of 8 years)	8.04	....	....	....	....

DISTRICT NO. 5.

Chas. L. Robinson, District Inspector.

The work of the Horticultural Department, during the seasons of 1918 and 1919, was seriously handicapped by numerous changes in the personnel. On May 1st, 1919, Mr. C. B. Wood resigned as district inspector, to accept a more remunerative position with a private concern. Mr. W. H. Wicks was secured as his successor, but before taking charge of the work, also received a more attractive offer from the State of Idaho, and accepted it. Mr. Harry L. Miller, district horticultural inspector for the Walla Walla territory then accepted the position here, and took active charge on May 1st. On July 1st, Mr. Miller resigned, to accept a better paying position in the marketing side of the fruit business, and the present incumbent took charge.

The loss to the department through inability to compete in salaries offered was not confined to district inspectors alone, but it was also impossible to keep a full force of deputies at the salaries allowed by law. Some of the retiring district inspectors took several men with them, and in one instance, the chief field deputy and four others were hired away at almost the same time. At times, there were only two or three deputies on duty.

The state officials and county commissioners realized that unless something was done to increase the salaries, there could be very little inspection services this year. A meeting was held, and a plan evolved whereby the $5.00 per car charge voluntarily contributed by the fruit shippers for each car certified by the department as being up to grade, was placed in a special fund which could be drawn upon.

About the time the above plan was adopted, a number of men returned from the service, some of whom had been with the department before, and we were thus able to keep an exceptionally able force of deputy inspectors through the rush season.

The Growing Season.

Notes on the work of the past fruit season show conditions as varied as the personnel of the department. Early in the blooming period, a series of cold nights made many growers fear that their crop was lost, but as usual, this did not prove to be the case. As will be seen in another section of this report, the yield as a whole, and its average per tree, was increased in practically every kind of fruit over previous seasons. On may 30, came an exceptional frost, which undoubtedly did considerable damage, and in many cases where the injured fruit remained on the tree, it was deformed or showed internal brown streaks. The continued cold of the blooming period combined with the later heavy frost, probably was responsible for some dropping and the poor keeping quality of some apples which, at time of picking, had apparently matured well. During the summer, the weather was not unusual, but just before picking, there was some windfall damage.

San Jose Scale.

Because of various factors, many people sprayed their orchards for San Jose scale more carefully than usual, and in individual cases, the beneficial results were plain to be seen. However, it is evident that the spread of scale is increasing, and if we are to keep it under control, everyone must spray more thoroughly, both as a remedy and a precaution. There are many older orchards in the valley in which scale has gained a foothold, especially in the tall tops, from which it can never be eradicated until these tops are pruned out and cut back so that they can be sprayed efficiently.

As a rule, the best results in scale control the past season, have been obtained with liquid lime sulphur testing at least four degrees Beaume. In some cases, dry lime sulphur has been used, but has usually given unsatisfactory results unless used much stronger than recommended by the manufacturers. The use of "Standard Fir Oil" for scale has been a failure, and without doubt, has caused a loss of many thousands of dollars to the people who used it. In general, it is again proved that unless a man can afford to experiment, he had better stick to the older known remedies.

Powdery Mildew.

Powdery Mildew of the apple is our most serious fungous disease here, and the results of its work, as seen this past season, make it plain that it must be given more attention in the future. As has been said by others, the damage is not so much to the fruit itself (although there was considerable fruit lowered in grade on account of mildew markings this season) as it is to the vigor and productiveness of the tree affected. An examination of an infected tree often shows that 50 per cent or more of the spurs that should bear fruit have been made unproductive for several years to come.

During the past season, many growers did not start early enough in their attack upon the mildew and consequently did not have very good results. The best control, as a rule, was secured with the sulphur sprays, making the first application when the buds begin to show pink, second, in the calyx spray, and third, about ten days after the calyx spray. Everything considered, the lime sulphur spray, used one to fifty, has proved most satisfactory with iron sulphide and atomic sulphur next in order.

Codling Moth.

On account of the cool spring, the time of emergence of codling moth was prolonged, so that the brood periods were not as definite as usual. Most growers obtained best results by spraying the calyx spray, first over spray and after that every eighteen to twenty days. Where thorough work was done, as a rule, there was a low percentage of wormy fruit. Throughout the district, there was less wormy fruit than usual.

There is still, however, a great deal of room for improvement in codling moth control. The past season in one Wenatchee section of a thousand acres, it is reported the worm percentage was reduced from twenty to forty per cent in 1918, to less than two per cent in 1919, by hiring a special spray supervisor and doing their work according to his directions. If all the growers in the different districts here would get together on similar plans, the same result could, no doubt, be obtained.

Fire Blight.

Fire blight did not prove as serious this past season as in previous years, and as a result, it was neglected by many growers. Unless blight is given more attention this coming season, it will soon have gained a foothold so that with another favorable season, we are liable to have another serious epidemic. Cyanide of mercury is now replacing the bichloride of mercury as a blight disinfectant to a great extent because it is said to be more effective against the bacteria on the wood. The bichloride of mercury is still considered the best disinfectant for tools used in cutting blight.

Collar Blight.

The effects of collar blight are showing up more than ever before, and a great many growers have become alarmed over its spread. Through the efforts of Mr. M. L. Dean, horticultural commissioner, a federal investigator, Mr. L. M. Hutchins, was sent here to make a survey of the situation, and we hope to have him back for further work along this line this coming summer.

Mr. Hutchins reports that, in most cases, he finds that collar blight is a form of fire blight, and recommends that in all cases wherever the cause of the collar injury is present, the diseased or dead bark should be carefully scraped away and the wound disinfected with cyanide of mercruy, or better still, painted over with a creosote coal tar paint, mixed and heated if necessary, in proportions so that the paint will spread easily without running. Orchards should be closely examined, and wherever an affected tree is found, the soil should be removed around the crown and the diseased part treated before the trouble has gone far enough to girdle the collar.

Harvest Season.

The harvest season has been one of varied experiences for everyone concerned. On the nights of October 24, and 26, came heavy freezes and probably four per cent of the apple crop, especially such late varieties as Winesaps, was damaged. Some of this tree frozen fruit was never picked, and much that was picked was worthless. This frost, combined with abnormally cold weather of December 12 and 13, caused considerable loss to the growers and shippers, and the need of better facilities for getting the crop off and under protection against frost is emphasized more than ever.

As everyone knows, one of the strong facts in lowering the price of apples this season has been the frozen, bruised and stem punctured fruit, which has decayed and been dumped on the market. During the coming season, according to the new grade rules, all bruised and stem punctured fruit will be barred from C. grade. This will mean that every grower must do his best to eliminate the production of that class of fruit. The factor most conducive to mechanically injured fruit is the present practice among growers of having their picking done by the box and putting a premium on speed in all phases of fruit handling. Good sorters should be paid more in proportion to the packers if the best results are to be obtained.

Prosecutions for Violation of the Horticultural Laws, Season of 1919.

State Horticultural Department vs.	Fine
October 17, 1919—Pacific Fruit & Produce Co., Yakima. For shipping out condemned apples without release from Zillah house	$25.00, and costs.
October 22, 1919—Phil Kays, Wapato, Wash. For shipping car of off-grade apples without release	$50.00, and costs
November 29, 1919—Ed Bannister, Yakima, Wash. For shipping car of off-grade apples without release	$25.00, and costs
December 16, 1919—D. Gallucci, Yakima, Wash. For moving 116 boxes of condemned apples without permission or release	$25.00, and costs
January 9, 1920—Roche Fruit Company, Yakima, Wash. For having in his possession for the purpose of sale 252 boxes of infected apples	$25.00, and costs
January 29, 1920—C. F. Perry, Yakima, Wash. For shipping condemned apples without release	$25.00, and costs

In each case taken into Court, the defendant pled guilty, and with one exception, the minimum fine was imposed. It is the opinion of this Department that the fines should have been much higher for, in most cases, many times the amount of the fine was probably cleared by breaking the law. A word of appreciation is due the prosecuting attorney for his cooperation in every case throughout the season.

Spray Materials and Machinery—1919.

Along with the increase in the value of fruit has come an improved demand for standard spray material and spray machinery. The total value of both sprays and machinery sold is well above that of any previous year. Practically all of the spray machinery bought was of the large and powerful type.

As will be noticed from the following tables, the powdered forms of arsenate of lead and liquid lime sulphur are far in the lead.

In addition to the standard materials sold, there are a number of less known ones that need mention, either because they have promise of giving good results or because they have proven to be practically worthless.

Among the former class is distillate oil emulsion, which is being used to a considerable extent as an aphis spray, and is also giving good results in the control of red spider. Barium tetra sulphide, known as B. T. S., is a dry sulphur compound, which was put on the market here for the first time during the 1919 season, and is said to be giving good results in the control of the San Jose scale, mildew and red spider. Experiments with this material will be carried on during the coming season, and the results of its use under conditions here will be watched with interest.

Johnson's Eureka spray was used on an experiment during the season, an account of same being given in another part of this report. Although it proved unsatisfactory in many cases, there is enough promise to warrant its use for further investigation.

Calcium arsenate is cheaper, and both it and magnesium arsenate, quicker acting than arsenate of lead, so should they prove to do the work of arsenate of lead in codling moth control without burning, they will be of special benefit as they may also do away with lead poisoning of stock.

Among the materials which have proven unsatisfactory or worthless are "Durrer's Tree Fluid" and "Standard Fir Oil." Durrer. the manufacturer of the former, was convicted by Federal authorities on more counts than any other case of the kind on record for misrepresenting and selling a worthless spray material, and the same will probably be off the market in 1920 Standard Fir Oil has proven very unsatisfactory as a scale spray, but due to the sweeping claims made by agents, this material made unusually large sales for an unproven spray, and there are many dissapointed users.

As to spray machinery, while most of the larger orchardists have their own machines, there is room for a number of good custom sprayers, as many small growers who cannot afford a good machine of their own, are anxious to get the fruit sprayed if a machine were only available.

Temperature Chart for April, May and June, 1910-1919, Inc.

Many inquiries have been received in the past in regard to what temperatures may be reasonably expected in this district during the blooming period and immediately thereafter.

Through the courtesy of Mrs. Alice Bender, of the U. S. Weather Bureau, stationed at Yakima, we were able to obtain the following record of the maximum and minimum temperatures for each week during the months of April, May and June for the past ten years. This will be of interest to many not only because of direct relations to the frosts of the blooming period, but also in regard to the activities of codling moth, and when growers may expect spray burning from the later applications of sulphur sprays. Whenever a sulphur spray is used and a temperature of 90 degrees Fahr. follows soon afterwards, there is danger of burning.

MONTH	WEEK	1910		1911		1912		1913		1914		1915		1916		1917		1918		1919	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
April.............	1st	28	72	25	80	33	76	27	61	32	74	35	72	33	72	25	62	22	70	35	75
April.............	2nd	33	71	24	72	30	76	32	82	37	72	32	75	32	73	28	64	33	72	26	66
April.............	3rd	29	86	28	76	38	68	30	76	31	72	35	83	26	66	29	62	26	84	30	69
April.............	4th	37	90	38	84	36	68	30	80	32	70	38	79	30	78	28	68	30	80	36	83
April (partial)...	5th	34	66	39	75	37	64	40	63	37	78	40	52	41	74	30	58	43	88	47	79
May.............	1st	40	88	30	76	39	82	32	80	39	85	36	86	32	82	33	77	33	86	46	78
May.............	2nd	42	86	39	72	43	89	37	80	41	84	41	83	32	71	45	82	36	82	34	78
May.............	3rd	38	86	38	80	43	89	37	78	46	82	33	77	39	79	32	72	31	70	38	92
May.............	4th	42	94	37	78	42	76	49	84	39	81	47	72	38	76	44	84	37	84	42	84
May (partial)....	5th	52	96	46	94	44	83	50	86	45	90	41	77	36	71	43	80	43	86	32	74
June.............	1st	43	85	42	90	46	96	51	94	38	92	46	87	44	82	42	88	39	94	41	88
June.............	2nd	44	96	53	97	45	96	40	82	42	85	44	80	43	89	40	91	51	97	35	80
June.............	3rd	40	84	48	94	46	97	42	86	43	92	46	82	46	96	46	94	46	98	42	94
June.............	4th	46	93	49	84	42	101	48	82	45	82	45	88	41	80	42	88	50	90	43	91
June (partial)....	5th	49	92	51	75	49	78	54	80	58	89	58	89	44	71	46	82	51	92	46	81

Experiment With Jonson's Eureka Spray.

By C. W. Hauck.

During the season, a great many inquiries were received relative to the effectiveness of a certain spray material on the market, recommended as a combination spray for the control of scale, worms and aphis, which could be applied during the growing season. The material is known as Jonson's Eureka spray.

In order to satisfy ourselves whether or not this spray would control orchard pests as recommended, the department made arrangements with Mr. Jonson to use his product in an experimental way on a small orchard on South Ninth Street in Yakima. The plot selected was very scaley as the result of several years neglect. The spraying of this plot was done by Mr. Jonson, who mixed the solution, set the dates for spraying and held the nozzle. Records were kept by this department.

Mr. Jonson recommended that the spraying be done while the scale were active and on the move, early in the summer. Accordingly, the first application was made on May 20, the second application, June 3. Two later sprayings were made, one on June 25, and another July 24. A "Bean Giant" sprayer was used and all the work done from the ground, with one spray gun.

Upon examination, after the first application, it was found that woolly aphids were killed immediately wherever hit by the solution. Live scale were found on the branches in abundance eighteen hours after the application and again three days later.

On June 2nd, a count was made of 200 scales from a number of branches selected at random among the check trees, and a similar count from the trees which had been sprayed. The checks showed 52 per cent dead and the sprayed trees 65 per cent dead.

On June 14, after the second application, another count was made, counting 2,000 from the checks and 2,000 from the sprayed trees. The checks showed 38.1 per cent dead and the trees sprayed twice showed 50.7 per cent dead.

On July 14, another thousand scale were counted from the trees which at this time had been sprayed three times. This count showed 55.1 per cent dead. The fruit at this time was quite scaley.

On July 31, after the fourth application, a count of 1,000 scale from each showed 35.5 per cent dead on the checks and 49.5 per cent dead on the sprayed trees. An examination of the fruit at this time showed an average of 56.3 per cent live scale per apple on the check trees and 14.3 per cent live scale per apple on the sprayed trees.

We consider "Eureka Spray" quite effective against aphis, both the woolly and green varieties, although not more so than Blackleaf 40 and Distillate Oil Emulsion. It is fairly efficient in its control of the codling moth, as the tract under consideration showed comparatively little infestation with worms during the early part of the season. Later, after the cessation of spraying, wormy fruit became more plentiful, and at harvest time, it was noted that the great majority of injuries due to the larvae were late ones. Fruit from the check trees showed both early and late injuries.

It is evident from the figures set down, that this material has some killing qualities when directed against scale, although scarcely a marketable apple was produced in this orchard.

Apparently, the spray reduced the scale by 12 to 15 per cent. This is not a large enough gain, however, to justify reliance on this material as the only instrument to be used against this pest. Far better results should be obtained in cases of severe infestation by the use of lime sulphur as a dormant spray.

At prices prevailing during the past season, this solution costs about $3.22 per tank.

In a survey of a number of orchards which have used Johnson's spray (some of them a number of seasons) the department has found that in a few instances, remarkably good results seem to have been obtained, while in the majority of cases, the users are not entirely satisfied. As yet, we have been unable to determine the reasons for so great a diversity of opinion in regard to its effectiveness. We expect to gather further data on this spray in the 1920 season.

Investigation of Lime Treatment as a Blight Remedy.

During the middle of July, it was brought to the attention of the Department that a number of growers were following the recommendations of a field man of a local organization, who advised that lime could be applied to the soil surrounding a tree affected with blight and that, by so doing, if the lime was properly raked into the surface of the soil, any fire blight in the tree would start to dry up and die in from three to five days.

After a long interview with the man making this recommendation, visits were made to as many orchards as could be conveniently found where this had been tried. In examining the various trees it was found that there was practically no difference on the whole between those trees infected with blight which had been treated and those which had not. In most cases blight was found inactive as is usually the case at that time of the year when wood growth is not succulent and vigorous.

Samples were taken from each tract which had been treated and pears were innoculated from the infected branches, and in from two to five days practically every pear inoculated showed a vigorous growth of fire blight, while those not inoculated, but kept along side as checks, were not so affected.

After considerable search for active blight, on July 23, seven trees on the Holden tract, near the Tieton View school, which were infected with active blight were treated with lime as recommended—ten to fifteen pounds per tree. Six days later there was no apparent difference in the appearance of the blight on the trees treated from those that were not. Samples were taken and pears inoculated, and in practically every case, again, rich cultures were obtained.

Cultures of the blight germs which had been secured from the tracts before mentioned, were taken on these trees and inoculations made in water sprouts and small branches. On August 1st, the blight appeared to be alive, but not spreading much, though small cankers were to be seen.

On August 4, it was found that most of the inoculations had dried up without spreading to any extent, but one tree which had been cut back heavily and then irrigated so that the growth was exceptionally vigorous, had some cankers from the inoculations which were spreading rapidly.

On August 5, more inoculations were made on both treated and untreated trees, and at about the same time part of the orchard was irrigated again.

On August 16, it was found that the inoculations on four trees were growing rapidly, and especially on the trees most recently irrigated. It seemed that more had taken effect on the lime treated trees than those not treated. Eleven small branchs and water sprouts had active cankers.

From the results of these investigations, it would appear that the lime treatment did not hinder the development of the blight and that the main limiting factor in the spread of the disease is the vigor and succulence of the growth in the presence of the blight germs.

Further work should be done along this line in order to come to more definite conclusions.

The following tables give the output of this district:

DISTRICT 5.

Shipments of Fresh Fruit and Vegetables (In Carloads).

YEAR	Apples	Peaches	Pears	Plums & Prunes	Cherries	Apricots	Grapes	Cantaloupes	Watermelons	Totals
1919........	7,105	732	1,100	109	117	12	130	260	231	9,796
1920........	9,701	2,079	1,470	109	139	....	233	300	100	14,131
Totals..	16,806	2,811	2,570	218	256	12	363	560	331	23,927

Fruits and Vegetables Used in Manufacture of By-Products (In Tons Fresh Fruit).

YEAR	Apples	Peaches	Pears	Plums and Prunes	Cherries	Potatoes	Mixed Vegetables	Totals
1919........................	37,356	121½	2,019	....	588	1,660	160	41,899½
1920........................	34,450	925	2,225	500	850	....	....	38,450
Totals..................	71,806	1,046½	4,239	500	988	1,660	160	80,349½

Fruit Storage Capacity (In Boxes).

YEAR	Number of Houses	KIND OF STORAGE			Totals
		Common	Frost-Proof	Iced	
1919..................................	....	....	3,165,970	1,587,600	4,753,570
1920..................................	....	....	3,625,130	1,915,490	5,540,620

Greenhouses.

YEAR	No. of Houses	Assessed Valuation	Square Feet of Glass	Volume of Business
1919..	5	$27,380 00	96,000	$24,600 00
1920..	5	11,810 00	82,000	24,000 00

Spray Materials Used.

YEAR	LIME SULPHUR		ARSENATE OF LEAD		OIL		Nicotine Sulphate, Lbs.	Number of Spray Machines Used
	Dry, Lbs.	Solution, Bbls.	Dry, Lbs.	Paste, Lbs.	Dormant, Bbls.	Distillate Emulsion, Bbls.		
1919.........	109,972	7,940	395,620	357,750	170	64	19,500	225
1920.........	265,700	9,925	794,476	121,975	....	55	10,094	344
Totals....	375,672	17,865	1,190,096	479,725	170	119	29,594	....

YEAR	Calcium Arsenate, Lbs.	Calcium Arsenite, Lbs.	Atomic Sulphur, Lbs.	Sulphur, Lbs.	Lime, Lbs.	Copperas, Lbs.	WHALE OIL SOAP		B. T. S., Lbs.
							Liquid, Gals.	Soap, Lbs.	
1919.........	....	....	23,690	655,000	328,000	6,000	525	5,000	....
1920.........	10,000	5,000	50,400	332,000	200,000	....	250	600	8,000
Totals....	10,000	5,000	74,090	987,000	528,000	6,000	775	5,600	8,000

DISTRICT NO. 6.

I. R. Fletcher, District Inspector.

In this District is to be found the widest range of kinds of fruit grown, of any district in the state.

Clarke County puts out the heaviest tonnage of evaporated prunes of any county in the state. It has the largest filbert orchard in the state, ripens more varieties of the Persian walnuts than any other county, and at Vancouver, is to be found the largest fig trees which mature their fruit each year. Chestnuts thrive here, and at Fort Vancouver, is to be found what is claimed to be the oldest apple tree in the state. It was fenced by the State Horticultural Association, and receives yearly attention from the association.

In Klickitat County, almonds and the California grapes are grown very successfully. White Salmon, in this county, is an extensive strawberry producing section, and in the spring of 1920, placed upon the markets crates of berries two days earlier than any other point in the state.

Small fruits of all kinds thrive in Cowlitz and Wahkiakum counties. They are conserved by local consumption and canning factories.

Skamania County has extensive prune interests in the southwestern part of the county, the apple and other orchard interests being confined to the southeastern part, in the vicinity of Underwood.

Weather conditions, in 1918, were normal for both growth and harvesting of the fruit crops. The December weather of 1919 killed many prune trees and seriously injured others, in both Clarke and Skamania Counties. The greatest injury was done to the almond and peach trees in Klickitat County.

The following tables show the scope of the prune industry and other data pertaining to the horticulture of the district.

DISTRICT 6.

Clarke County Tree Census, July and August, 1918.

VARIETY	1-5 Years	6-10 Years	11 Years and Older	Totals
Apples	6,698	29,818	48,184	84,700
Cherries	598	1,385	5,942	7,925
Peaches	1,037	1,613	531	3,181
Pears	2,051	2,751	22,084	26,886
Prunes	165,451	99,598	390,941	655,990
Family Orchard	2,969	6,697	40,945	50,611
Walnuts	1,842	2,834	2,460	7,136
Filberts	211	385	1,154	1,750
Almonds	7	....	32	39
Figs	....	8	10	18
Mulberries	10	....	....	10
Quinces	6	11	33	50
Chestnuts	....	....	25	25
Apricots	....	4	16	20
Totals	180,890	143,804	512,357	838,341

Grapes—18,850 plants.

Misc. Small Fruits (Blackberries, Raspberries, Loganberries and Strawberries)—100 acres.

PRUNE ORCHARDS WITHOUT DRYERS.

LOCAL DISTRICT	1-2 Years	3 Years	4 Years	5 Years	6-10 Years	11 Years	Total No. of Trees	Number of Owners	Average Trees Per Owner
Vancouver, R.F.D. No. 1	700	800	460	....	600	8,650	11,210	22	510
Vancouver, R.F.D. No. 2	200	300	400	250	1,175	7,885	10,210	22	464
Vancouver, R.F.D. No. 3	7,075	4,230	12,210	15,740	12,890	20,685	72,780	91	800
Vancouver, R.F.D. No. 4	700	....	230	500	840	12,970	15,240	26	586
Vancouver, R.F.D. No. 5	1,135	1,350	1,725	2,055	1,450	2,405	10,120	22	460
Vancouver, R.F.D. No. 6	4,450	....	2,000	1,930	1,655	9,980	20,015	49	408
City	300	....	....	....	....	5,740	6,040	8	755
Washougal	11,110	10,870	800	1,750	3,060	2,635	30,225	40	756
Cape Horn	....	500	....	....	120	1,970	2,590	7	370
Venessberg	375	325	....	....	4,950	....	5,650	2	2,825
Heisson	300	....	....	....	260	....	560	3	187
Crawford	500	1,500	....	....	....	....	2,000	2	1,000
Yacolt	....	....	....	....	....	200	200	1	200
Battle Ground	475	720	110	....	....	2,470	3,775	13	290
Brush Prairie	8,050	3,720	1,450	1,150	500	1,975	16,845	30	562
La Center	800	100	825	400	1,690	5,905	9,720	28	347
Etna	....	....	100	....	600	....	700	3	233
Woodland	....	....	....	....	725	970	1,695	8	212
Orchards	115	....	900	....	200	20,470	21,685	38	571
Ridgefield	1,950	3,050	7,130	4,810	7,675	5,345	29,960	48	624
Camas, R.F.D. No. 1	6,365	2,890	1,800	....	100	2,855	14,010	35	400
Camas, R.F.D. No. 2	1,400	....	100	....	300	3,230	5,030	8	629
Totals	46,000	30,355	30,240	28,585	88,790	116,290	290,260	506	574

Total number of Prune Trees in entire locality	635,124
Total number of Drying Plants in the entire locality	225
Total amount of Drying Capacity in tons per 24 hours	1,178¾
Average number of Trees per ton of Drying Capacity	539

NOTE—Date of all records on this sheet are as of July and August, 1918.

PRUNE ORCHARDS WITH DRYERS.

LOCAL DISTRICT	Total Number of Trees	Number of Owners	Average Tree Per Owner	Dryer Capacity in Tons	Average Dryer Capacity in Tons	Total No. of Trees	No. of Owners	Average Tree Per Owner
Vancouver, R.F.D. No. 1...	69,755	28	2,491	234	8	80,965	50	1,619
Vancouver, R.F.D. No. 2...	6,740	7	963	24	8	16,950	29	584
Vancouver, R.F.D. No. 3...	84,625	49	1,727	328	7	157,405	140	1,124
Vancouver, R.F.D. No. 4...	21,350	12	1,779	66	6	86,590	88	968
Vancouver, R.F.D. No. 5...	....	....	....	....	....	10,120	22	460
Vancouver, R.F.D. No. 6...	8,540	9	949	28½	8	28,555	58	492
City........................	2,300	1	2,300	4	4	8,430	9	927
Washougal.................	29,155	22	1,325	151½	7	59,380	62	958
Cape Horn.................	1,100	2	550	8½	2	3,140	9	349
Venessberg.................	....	....	....	....	....	5,650	2	2,825
Heisson....................	2,600	2	1,300	5½	3	3,160	5	632
Crawford..................	....	....	....	....	....	2,000	2	1,000
Yacolt.....................	....	....	....	....	....	200	1	200
Battle Ground.............	3,650	3	1,217	9	3	7,425	16	464
Brush Prairie..............	6,150	5	1,230	15½	3	22,995	35	657
La Center..................	14,304	16	894	35¾	2	24,024	44	546
Etna........................	....	....	....	....	....	700	3	233
Woodland..................	....	....	....	....	....	1,695	8	212
Orchards....................	3,850	4	963	15½	4	25,585	42	608
Ridgefield..................	8,405	10	841	28	3	38,365	58	661
Camas, R.F.D. No. 1.......	62,980	39	1,614	155¾	4	76,940	74	1,041
Camas, R.F.D. No. 2.......	19,960	16	1,248	74¼	5	24,990	24	1,041
Totals...............	345,414	225	1,535	1,178¾	5¼	635,124	731	869

Total number of Prune Trees in entire locality..	635,124
Total number of Drying Plants in the entire locality..	225
Total amount of Drying Capacity in tons per 24 hours..	1,178¾
Average number of Trees per ton of Drying Capacity..	539

NOTE—Date of all records on this sheet are as of July and August, 1918.

DISTRICT 6.

Shipments of Fresh Fruit and Vegetables (In Carloads).

YEAR	Apples	Peaches	Pears	Fresh Prunes	Dried Prunes	Fresh Apricots	Dried Apricots	Grapes	Almonds	Walnuts	Filberts	Strawberries	Cantaloupes	Mixed Fruits	Potatoes	Onions	Cabbage	Tomatoes	Mixed Veg'bles	Totals
1919......	248	3	26	14	*6,700	....	*20	3	*30	*14	*8	100	1	5	695	31	20	8	¼	1,154¼
1920......	685	3	39	....	*2,050	1	*31	3	....	....	....	13	2	6	583	19	33	10	½	1,397½
Totals.	933	6	65	14	*8,750	1	*51	6	*30	*14	*8	113	3	11	1,278	50	53	18	¾	2,551¾

*Tons.

Fruits and Vegetables Used in Manufacture of By-Products (In Tons Fresh Fruit).

YEAR	Apples	Pears	Straw-berries	Black-berries	Rasp-berries	Cherries	Squash	Beans	Totals
1919	....	400	40	40	200	450	400	70	1,600
1920	1,500	400	50	50	140	400	....	50	2,590
Totals	1,500	800	90	90	340	850	400	120	4,190

Fruit Storage Capacity (In Boxes).

YEAR	Number of Houses	KIND OF STORAGE			Totals
		Common	Frost-Proof	Iced	
1919	12	84,000	40,000	....	124,000
1920	12	84,000	40,000	....	124,000

Greenhouses.

YEAR	No. of Houses	Assessed Valuation	Square Feet of Glass	Volume of Business
1919	3	$2,350 00	13,840	$6,200 00
1920	3	5,700 00	14,960	6,000 00

Spray Materials Used.

YEAR	LIME SULPHUR		ARSENATE OF LEAD		Number of Spray Machines Used	Lime, Lbs.	Blue-stone, Lbs.	Soluble Lime Sulphur, Lbs.
	Dry, Lbs.	Solution, Bbls.	Dry, Lbs.	Paste, Lbs.				
1919	20,000	2,147	16,000	80,000	344	8,000	6,000	5,000
1920	36,000	1,874	46,000	46,000	347	10,250	8,450	4,000
Totals	56,000	4,021	62,000	126,000	691	18,250	14,450	9,000

DISTRICT NO. 7

Theo. Albert, District Inspector.

One of the leading commercial fruit industries in this district is the growing of cranberries. Pacific County ranks first in point of production, and Grays Harbor County second. This is not an old branch of commercial fruit growing in the Northwest, but it has become an important one in the coast counties. The cranberry is indigenous to the entire Pacific slope of the state. Some cultivated bogs are to be found in the vicinity of Olympia, and in the Pupallup valley. In the southwest part of the state, mostly in Pacific County, there is about three thousand acres of peat bog land, nearly one thousand of which has been developed into cultivated cranberry bogs. These bogs represent an investment of about one and one-half millions of dollars. Some of them have been bearing over ten years and have demonstrated the fact that the industry is well established. Co-operative selling organizations have been organized for the handling of the crops. They have also aided in the purchasing of spray material and other perquisites to the industry.

An extensive fruit product plant has been established which manufactures all of the small or cull berries into several products which are very popular upon the markets. The cannery factories are using large quantities of the fruit.

The preparation of the bogs is expensive. They are first ditched to carry off the surplus surface water. They are then scalped, the entire turf being removed, leveled and covered with sand to the depth of three to four inches. This is lined out in straight rows and the plants are put in on the square, at a distance ranging from ten to sixteen inches apart. They are then cultivated and kept clean of weeds for about three years, when the bogs should reach maximum production. The average yield, as reported by F. R. Beck, county agent for Pacific County, ranges from 65.2 boxes to 211.3 boxes per acre, depending upon the varieties. The principal varieties grown are McFarland, Centennial, Cape Cod, Late Howe, Early Black, Bachelor, Bugle and a few others, their productiveness ranging in the order named. The average cost of picking the fruit ranges from 50c to $1.03 per box.

The 1918 crop in this district was 14,270 boxes. The crop was greatly shortened by heavy spring frosts at blooming time. A conservative yield under favorable conditions should give a crop of 35,000 to 40,000 boxes. The 1920 crop promises to be at least 23,000 boxes. Ninety-five per cent of the growers are organized in three different associations. Representatives of these associations constitute the Pacific Cranberry Exchange, so that nearly the entire crop is handled by the organization, which has adopted the state grades and send their fruit out under state inspection regulations.

The success of these operators has stimulated the industry until it ranks as one of the leading industries in that part of the state.

This entire district contains large areas of cut-over stump lands which are especially adapted to the growing of bush and vine fruits. In some sections the wild evergreen blackberries are gathered and many tons are used by local canning factories, as well as carloads which are shipped out.

In one large tract of stumps the brush has been cleared off and berries planted around the stumps as a semi-cleared cultivated proposition. The experiment looks promising.

Cherries, both sweet and sour, plums and prunes, some varieties of pears, and some kinds of apples do especially well in this district when properly taken care of.

Near Detroit, in Mason County, on Eckerts Island, is to be found some very successful vineyards. The Island Belle grape is the prevailing variety and seems especially adapted to the Puget Sound conditions.

The horticultural output of the district is as per following tables:

DISTRICT 7.

Shipments of Fresh Fruits and Vegetables (In Carloads).

YEAR	Grapes	Cranberries	Strawberries	Potatoes	Totals
1919	23	53	7	10	93
1920	24	50	4	....	78
Totals	47	103	11	10	171

Fruits and Vegetables Used in Manufacture of By-Products (In Tons Fresh Fruit).

YEAR	Apples	Peaches	Pears	Plums & Prunes	Strawberries	Blackberries	Raspberries	Cherries	Loganberries	Small Fruits	Mixed Vegetables	Totals
1919	4,488	70	753¾	35	75	372	60	¾			163½	6,018
1920	4,437	....	750	4½	186¼	311	152	182½	12¾	2	20	6,058
Totals	8,925	70	1,503¾	39½	261¼	683	212	183¼	12¾	2	183½	12,076

Fruit Storage Capacity (In Boxes).

YEAR	Number of Houses	KIND OF STORAGE			Totals
		Common	Frost-Proof	Iced	
1919	13	44,000	102,300	57,200	203,500
1920	51	413,000	157,000	140,000	710,000

Greenhouses.

YEAR	No. of Houses	Assessed Valuation	Square Feet of Glass	Volume of Business
1919	12	$22,100 00	122,300	$39,400 00
1920	12	22,200 00	122,300	37,950 00

Spray Materials Used.

YEAR	LIME SULPHUR	
	Dry, Lbs.	Solution, Bbls.
1919	50	25
1920	50	25
Totals	100	50

"Picking Red Raspberries" in the Puyallup Valley.

DISTRICT NO. 8.

Henry Huff, District Inspector, Located at Sumner.

In this district is to be found the most extensive small fruit growing interests in the state.

The Puyallup Valley in Pierce County is probably the most intensively devoted to the growing of strawberries and bush fruits of any similar western territory. At Puyallup and Sumner, are located extensive canning factories which consume large quantities of fruit of all kinds, as well as vegetables from the western counties, besides shipping many carloads of tree fruits from east of the mountains.

These interests are being rapidly extended into the other counties of the district, Kitsap, Jefferson and Clallam. In some of these counties, the planting of small fruit was very extensive during the spring months of 1920, and will be further increased the coming season.

This is also one of the important truck gardening sections. In the winter of 1918, more than one hundred carloads of head lettuce were shipped from this territory into Chicago and other middle western distributing centers, besides the vast quantities which were consumed in Seattle and Tacoma.

The following table shows the acreage of the different horticultural crops in Pierce County. The same data will be gathered in other counties.

DISTRICT 8.

Shipments of Fresh Fruits and Vegetables (In Carloads).

YEAR	Apples	Pears	Plums & Prunes	Cherries	Gooseberries	Blackberries	Raspberries	Loganberries	Strawberries	Potatoes	Cabbage	Cucumbers	Celery	Rhubarb	Asparagus	Mixed Vegetables	Totals
1919	4	3	2	4	1	54	47	4	49	55	42	8	6	50	3	18	350
1920	5	2	2	3	2	61	58	5	53	60	60	10	5	55	4	15	400
Totals	9	5	4	7	3	115	105	9	102	115	102	18	11	105	7	33	750

Fruits and Vegetables Used in Manufacture of By-Products
(In Tons Fresh Fruit).

YEAR	Apples	Peaches	Pears	Apricots	Strawberries	Blackberries	Raspberries	Cherries	Grapes	Loganberries	Small Fruits	Mixed Vegetables	Rhubarb	Totals
1919	2,464	153	924	.....	113	1,404	1,070	95	5	109	120	199	297	6,952
1920	5,178	346	1,002	151	565	2,202	1,706	451	6	603	129	527	......	12,866
Totals	7,642	499	1,926	151	678	3,605	2,776	546	11	712	249	726	297	19,818

Fruit Storage Capacity (In Boxes).

YEAR	Number of Houses	KIND OF STORAGE			Totals
		Common	Frost-Proof	Iced	
1919	4	37,300	....	4,200	41,500
1920	4	37,300	....	4,200	41,500

Greenhouses.

YEAR	No. of Houses	Assessed Valuation	Square Feet of Glass	Volume of Business
1919	15	$20,000 00	268,500	$137,000 00
1920	15	20,000 00	268,500	137,000 00

Spray Materials Used.

YEAR	LIME SULPHUR	
	Dry, Lbs.	Solution, Bbls.
1919	100	50
1920	100	50
Totals	200	100

VICINITY	Raspberries, Acres		Blackberries, Acres		Strawberries, Acres		Loganberries, Acres		Currants, Acres	
	Old	New	Old	New	Old	New	Old	New	Old	New
Sumner	440¾	186¼	117½	45	45¾	32¾	13¼	1¼	6¼	......
Puyallup	222¾	96¼	339	56½	12	8½	......	10½	7¾	......
North Puyallup	60¾	61	16¼	½	¾	4¾	......	......	½	......
Riverside, Puyallup, R. 3	79½	74¾	26¾	18	44¾	31¼	½	1¼	1	......
Edgewood, Puyallup, R. 1	21½	21½	½	1½	40¾	50¾	......	......	1¼	......
McMillan District	9¼	34	......	2½	¾	5¾	......	1	......	......
Firwood District	112¼	84¼	15	3½	63¼	66¼	3½	......	½	......
Milton District	6½	11	½	......	16½	21½	......	......	¼	......
Alderton District	42	41¼	10½	1¾	¼	7¾	½	½	¾	......
Fife District	14¾	18	2	1½	25	15¼	¼	¼	½	......
Orting District	3½	13	......	......	1	1½	......	½	......	......
Buckley District	3	3	......	......	......	1	......	......	......	......
Gig Harbor District	5	......	......	......	140	40	25	10	......	......
Pennsylvania Avenue	5	2	......	......	12	8	......	......	......	......
Fox Island	......	......	......	......	5	3	1	......	¼	......
McNeil Island	......	......	......	......	7	10	1	......	¼	......
Midland	1	1	......	......	4	3	½	......	......	......
Summit	6	15	1	......	16	14	......	......	¼	......
Long Branch, Lake Bay, Vaughn	......	......	......	......	8	4	2	5	......	......
Puyallup Heights	20	6	10	......	6	4	2	......	......	......
Pierce County, scattering	15	20	5	......	6	4	......	......	......	......
Totals	1,005½	688¼	544	140¾	458¾	338	49½	30¼	18¾	......

VICINITY	Gooseberries, Acres	Rhubarb, Acres	Asparagus, Acres	Pear Trees	Apple Trees	Cherry Trees		Other Kinds Trees
						Sweet	Sour	
Sumner	8¾	62	29	2,506	6,123	2,087	1,668	564
Puyallup	2½	1½	1¾	2,527	9,326	2,520	1,998	1,186
North Puyallup		1		339	2,316	675	73	142
Riverside, Puyallup, R. 3	1¾	6½	¾	933	2,626	554	628	602
Edgewood, Puyallup, R. 1	1			531	2,718	496	695	176
McMillan District				57	351	50	221	66
Firwood District	¼	4¼		285	2,068	520	68	153
Milton District	¼	½		63	478	225	32	50
Alderton District		2	1	287	1,475	356	2,055	285
Fife District	½	8¼	½	38	1,286	128		34
Orting District		½					25	
Buckley District				50		20	300	
Gig Harbor District				1,420	17,823	832	832	2,709
Pennsylvania Avenue				75	400	150	60	75
Fox Island				7	30	5	5	7
McNeil Island				3	50	10	11	35
Midland				80	300	95	65	20
Summit				100	700	250	90	67
Long Branch, Lake Bay, Vaughn				624	8,038	377	100	3,445
Puyallup Heights				684	2,415	800	700	
Pierce County, scattering				900	8,000	1,500	750	
Totals	15	86½	31½	11,438	66,553	11,662	10,387	9,566

VICINITY	Potatoes, Acres	Cucumbers, Acres	Cauliflower, Acres	Tomatoes, Acres	Cabbage, Acres	Lettuce, Acres
Sumner District	145	¾	1	5	18¼	7
Puyallup District	19¾		1	1	2½	
Edgewood District	9¾				1	
Fife District	421¾	60½	7¼	5	248	28
McMillan District	6¼				1	
Alderton District	10¾			¼	4½	
North Puyallup District	19				1	
Firwood District	179¼	28¼	8	1¾	82¾	
Riverside District	61¼	2		4½	9	14¼
Pierce County, scattering	50			5	10	
Totals	923	91½	17¼	22½	379	49¼

VICINITY	Celery, Acres	Beans, Acres	Peas, Acres	Corn, Acres	OTHER SMALL STUFF		
					Beets, Acres	Carrots, Acres	Misc., Acres
Sumner District	4½	10½	2½	2½	½		7
Puyallup District							
Edgewood District		½	½	½			
Fife District	9	19¾	17¾	70	19	4¾	22¼
McMillan District							
Alderton District							
North Puyallup District							
Firwood District				1½			
Riverside District	4½	2¼	4¾	20½	9	15¾	9¼
Pierce County, scattering	½	10	3	5	10		5
Totals	18½	44	28½	100	38½	20½	40½

DISTRICT NO. 9.

F. N. Rhodes, District Inspector.

From February 1, 1918, to April 30, 1918, we made 1,231 orchard inspections in King County, 184 of which were visited by the inspector the second and third time, making a total of inspections, 1,415. Out of this number of orchards, 663 have been sprayed this spring, 174 places were vacant, 262 orchards are practically worthless, 21 orchards have been taken out this spring and 27 have stated their intention of cutting out their trees this year; 84 orchards pruned but not sprayed. Eleven compulsory spraying notices were served, all of which were complied with. Forty-five letters were written notifying owners of bad conditions of orchards. We also took a tree census of the orchards visited which shows 67,292 apple trees, 23,163 cherries, pears 20,249, plums and prunes 14,698, peaches 3,392, apricots 268, quince 614, nuts 409.

The districts in the county where these inspections were made were Vashon and Maury Island, So. Park to Pacific City inclusive, all the East Side of Lake Washington to North Bend. Our duties were to advise and show the orchardists how to take care of their fruit trees, etc.

Potato Tuber Moth Inspection.

I left Seattle May 17, 1918, for San Francisco, driving a Ford touring car from there to Los Angeles, a distance of 440 miles, going via Stockton, Merced, Fresno and Bakersfield, arriving at Los Angeles May 23, and inspected the first car of potatoes the following day. I saw from the very first inspections that the tuber moth was to be much more serious than any of the other three years I had been in California. During my five weeks stay in the Southern part of the State I visited and inspected many potato fields as well as carloads in the vicinity of Los Angeles, Buena Park, Norwalk, Stanton, Fullerton, Anaheim, El Monte, Savannah, Baldwin Park, Arcadia, Pomona, Ontario, Chico, Upland; several places in San Bernardino County as far up as San Jacinto, a distance of about 120 miles from Los Angeles, also many potato growing sections in what is known as the San Fernando Valley. I traveled by auto about 3,000 miles through Los Angeles. Orange and San Bernardino Counties. By having my auto with me, I was able to cover a great deal more ground this year than other years, when I had to depend on being taken to the different districts where cars were being loaded by the shippers. I was asked to pass on a field of 27 acres of potatoes at Pacomia, in the San Fernando Valley, and upon inspection found the potatoes so badly infected with tuber moth as to be nearly worthless. This Japanese grower had paid $2.00 per sack for his seed, the field would average 50 sacks to the acre, yet he lost 90 per cent of the entire crop because of the serious tuber moth infection, many of the potatoes having as many as 15 larvae in them, and they were surely unfit for human consumption. I saw several fields of potatoes in the same district which were also in very bad condition. This district has tuber moth every year. Had the conditions this season been such that the movement of southern California potatoes had been slow there certainly would have been a large loss from tuber moth, but the demand was strong and potatoes moved out fast.

I invariably found the principal causes for tuber moth infection in southern California to be, First: shallow planting, exposing the potatoes to attacks of the adults or moths which are night flyers and at which times many of the eggs are deposited on the exposed potatoes. Potatoes grown on heavy, cloddy land which bakes and cracks, would invariably be found to be infected, and shallow plantings on fine sandy soil would occasionally show some infection, but where the potatoes were on sandy soil and five and six inches deep, which was the case in a number of places, there was little and no infection in the early crop because neither the moth or the larva can get at them at this depth. I do believe that were potatoes in southern California planted 4 to 6 inches in depth and grown only on fine sandy, soil, and when dug, put in new bags and taken off the field the same day, or else kept well covered, there would be little or no trouble on account of tuber moth. I have seen two fields of potatoes separated only by the highway, the soil in one field was fine sand and showed no tuber moth whatever, the soil in the other field was heavy, had become baked and cracked, giving the moth and larvae an easy access to the potatoes, and these certainly were quite wormy. These southern potatoes should be dug and marketed as soon as they will stand shipment and should not be held at all.

In San Joaquin County, where potatoes are grown on the delta, or what is known as river lands, where plenty of water is usually to be had, I seldom found the tuber moth in the early potatoes, but when grown on the higher dry lands where water is not plentiful, they generally show some infection. San Joaquin County potato acreage this year is 20,000 acres against 25,000 acres in 1917, and the average yield will go 125 sacks per acre, and I understand Geo. Shima, the California potato king, as he is termed, controls 7,500 acres out of the 20,000 acres. The yield in the Los Angeles district is not more than 30 to 35 sacks per acre.

I issued certificates as to the freedom from tuber moth on 206 carloads of spuds which were shipped to Washington, Oregon, Utah, Montana, Idaho and Texas and refused certificates on 45 cars and in addition examined about 25 cars which were finally not shipped into territories requiring certificates. Figuring on an average of 10 sacks cut and examined to each car I examined a total of 2,750 sacks, many times examining nearly all the potatoes in a sack. On a money basis of $800.00 per car, right through the total value of the potatoes examined would be $220,000.00. Many cars of potatoes this season were from 10 to 18 days in transit to Washington points, when 7, 8, and 9 days should have been the limit of time in transit. When a car of potatoes was inspected and passed at shipping point, and reached destination in this state in 6 or 7 days there would be little or no danger of eggs hatching and potatoes becoming infected in transit, but when a car is 18 days in transit, as was the case in one car, there can be no assurance that potatoes would arrive at destination free from infection. California potatoes, especially, certainly should never be delayed in transit where it was possible to get them through, because aside from the danger from tuber moth hatching in transit, the disease known as "Leakers" develop very fast in cars delayed in transit. Two years ago the iceing of southern California potatoes was unknown; this year practically all southern stock moved to market under ice, which was a saving of many thousands of dollars to growers and shippers.

This year there were many more small potato growers in Southern California than other years and a number of cars of potatoes contained as many as eight different growers, thereby making the thorough examination of a carload next to impossible.

For thorough inspection purposes not more than three to five different growers should be allowed in the same car and then only one grower's stock on the floor of the car and the other grower's stock on the top decking and each lot marked, number of sacks, etc., so as to distinguish one from the other. Two certificates should be issued, one to attach to bill of lading, the other securely tacked on the inside of the car door.

The season is now over for California potatoes and from the first shipment in May to date, Seattle, received 254 carloads.

The orchard business has improved very rapidly in King County the past two years, owing to more thorough and systematic care being given in the shape of pruning, spraying, cultivation, fertilization, marketing, etc. We have been advocating less heading back and more thinning out of bearing trees for the reason the tendency has been to cut back bearing trees too heavy, year in and year out, with the result many trees have failed to set a good crop of fruit. During the past year there has been more thorough spraying and pruning done than has probably been done in any other two years. Cultivation has been more generally practiced the past season than ever before, owing partly to the very dry season just past and to the great amount of crop production propaganda work on account of the war. There has certainly been much more attention given to packing and marketing of fruit this year. The local fruit entering our public markets, stores, etc., has been freer from damage caused from disease and insect pests than any time during the past eight years.

King County has two new insect pests which have apparently come to stay, viz., Codling Moth and San Jose Scale. Codling Moth has been quite severe on Vashon Island and the Bellevue district on Lake Washington. San Jose scale has shown up in four orchards in the Bellevue District and two small places on Vashon Island, and is quite generally distributed among orchards around Kennydale and Kent, Washington. There has been practically no arsenate of lead used to combat Codling Moth, but we intend to urge its use very strongly the coming season. A few trees in two different orchards showing San Jose Scale have been cut down and burned, the other San Jose Scale infected orchards have been sprayed during the dormant season with soluble sulphur and lime sulphur, the lime-sulphur treatment effecting an almost complete cleanup.

Because of the exceptionally dry season during 1918 apple and pear scab, apple powdery mildew, etc., has not been as serious as previous years.

King County has under State License at this time 51 nurseries which include greenhouses growing both flowers and vegetables. All of the above nurseries were inspected at digging time, certificates of inspection being issued. All of the above nurseries handling fruit and trees were requested to spray all fruit trees with a solution of lime-sulphur before sending them out on orders. This request has generally been complied with.

No record of outgoing nursery stock, as notices are usually sent to Olymipa as to amount. There were about 240,000 strawberry plants shipped out of the county, 80,000 going to California.

There were shipped into King County, as per postal notices received, apple trees, 3,866; pears, 1,877; cherries, 2,728; peaches, 407; apricots, 125; shrubs, 4,497; strawberry plants, 14,734; other berry plants, 10,058.

There were imported from Japan 9,296 ornamental trees and shrubs, 53 plants from British Columbia and 10 plants from Ireland. I destroyed two shipments of Japanese imported currants, one lot of 10 and the other lot consisting of 25 currants, according to Federal Regulation No. 7, which prohibits the importation of currants and gooseberries on account of being host plants of the White Pine Blister Rust.

Destroyed 5 imported Japanese Wistarias because of Wistaria Gall Fly infestation. Ordered the return to Japan of 6 potted plants because of Federal Quarantine Regulation No. 51, which prohibits the importation of all nursery stock from the Orient as a war measure.

Refused entry and ordered returned to Japan, 5 Five Leaf Pine trees, because of Federal Quarantine which prohibits the importation of all five-leaf pine trees from all foreign countries because of the danger of establishing the White Pine Blister Rust disease.

Seattle has some of the finest public retail markets on the Pacific Coast. It is also said by visitors from other States to be the best and cleanest market in the United States, that is, from a horticultural standpoint. An inspector from the office visits these public markets at least twice a week and all scabby, scaley, or worm eaten fruit is condemned and either repacked or sent to the canneries as the case may be. We always insist that all infected fruit be taken off the display stands in our presence and at the same time request the fruit dealer not to buy or handle infected fruit; we also urge the farmers who have their own fruit for sale that they must not bring wormy, scaley or scabby fruit to Seattle, as they will not be allowed to sell the same in the markets or stores, etc. We have also a great many times found small lots of fruit showing decay repacked, putting decayed friut in garbage cans, etc. Our many visits among the farmers at these public markets gives us a good opportunity to impress upon them the necessity of thorough pruning and spraying, etc., that they may have good clean fruit and plenty of it.

There were 116 condemnations of fruits and vegetables during the past year as follows:

Apples 4,212 boxes, pears 185 boxes, prunes 111 boxes, peaches 83 boxes, nectarines 12.

The above 116 condemnations included 45 carloads of potatoes turned down while the writer was in California. The principal causes for these condemnations were Codling Moth, San Jose Scale, Oyster-Shell Scale, Potato Tuber Moth, Apple and Pear Scab, etc.

Two car loads of the above apples were confiscated in the railroad yards at Seattle, locked up and switched directly to a by-product factory here. Both car loads were culls and badly infected with Codling Moth.

We were obliged to visit the U. S. Post Office from two to four times a week in order to examine Nursery Stock going through the mail as parcel post.

During the last 8 months of 1918, our office sent out 420 letters and received 470 phone calls, no record being kept of personal calls at the office.

Working in cooperation with the State Bureau of Markets we made sixty inspections, covering mostly carload lots of potatoes; Certificates of Inspection or grade being issued in each instance.

There were 67 cars of Florida grape-fruit disinfected durng 1918.

I have the followng to report showing the activities of this office covering this spring's orchard work. I have had four deputies carrying out this work and beginning January 6th, 1919, to April 1st, 1919, Mr. R. F. Jannings worked 70 days, J. C. Eakle 47 days, W. H. Taber 41 days and Frederick Robie 25 days, making a total of 183 days which were spent almost entirely in the different orchards in King County, in such districts as Vashon Island, White River Valley, Richmond Beach, the East Side of Lake Washington at Kirkland, Northrup to Medina, Bellevue, Yarrow Point, Kennydale, Renton, Auburn, Enumclaw, etc.

These men visited 819 different orchards, berry growers, etc., and they were obliged to make 155 second and third visits on account of growers being away at first visit, letters written, notices served to clean up, etc., making a total of 974 visits which would average five and a fraction visits per man per day. There were 202 actual demonstrations given in pruning apple trees, pears, cherries, plums and prunes, peaches, berries, grapes, roses, etc., with a total attendance of 355 people. The greater number of these demonstrations were given to individual growers in their own orchards, the boys pruning up in good shape one to three or four trees per demonstration. Many places trees were from 5 to 30 years of age, many of which may never have been pruned, at least properly.

It was the aim and policy of these inspectors to explain as they went along in the pruning the reason for every cut made in a tree. We feel that we have started many growers on the right track along the line of pruning, the most important and yet least understood practice in the care of fruit trees.

We found a great many growers who annually cut back, sometimes very severely, the tops of their bearing apple trees and allowed their pear trees, especially Bartletts, to go on bearing with practically no pruning whatever. The result has been many apple trees are bearing very lightly, others only every other year, etc., and pear trees breaking down for the want of proper pruning in order to strengthen the branches that they might better be able to hold a crop of fruit. We put great stress upon the practice of thinning out only of bearing apple trees, also opening up the centers in this climate, thereby allowing more sunshine and better air circulation which would be conducive to the formation of fruit buds, and at the same time retard the development of scab and other fungus growth by allowing of quick drying of branches, leaves, etc., after rains, dews, also lessening the cost and labor of spraying. We feel greatly encouraged by the enthusiasm shown during the past season's pruning work.

We also induced 51 growers to cut down a total of 1,249 trees which in our opinion were practically worthless, having been so long neglected that they were beyond redemption because of inroads made by insects, fungus diseases, etc. This office served 15 legal disinfection notices on orchards and wrote 88 leters urging and requesting the necessity for immediate pruning and spraying of neglected orchards. We sent out 290 circulars to county papers and individual growers covering such subjects as pruning, spraying, cherry pollination, grape culture, strawberry root weevil, etc. We received 165 personal and phone calls asking for information pertaining to horticultural questions.

The greatest difficulties encountered this spring were the labor question, shortage of spraying outfits, and the past 30 days shortage of some brands of Lime-Sulphur Solution. We received about 55 requests from growers wishing to hire men to prune and spray, about half of which we were unable to supply. We hope to be able to induce a number of growers to purchase spraying outfits suitable to handle the neighborhood work before the next dormant spraying season arrives.

Potatoes.

At the request of the Seattle and California potato dealers and shippers and with the sanction of our State Department of Agriculture, I accordingly left Seattle, May 9th, 1919, to attend to the annual potato inspection work in California in order to prevent the introduction into this State of the Poato Tuber Moth.

Spent two days in the Colma District in the vicinity of San Francisco where practically all of the Garnet variety of potatoes are grown. I visited twenty different potato fields and at that time could not find any evidence of the Tuber Moth. This district slopes to the West right on the ocean and because of the prevailing cold winds during the night and very often during the day time I do not believe the Tuber Moth can ever become a dangerous pest in that district.

In the Los Angeles District I stayed 48 days traveling to the potato loading stations in all directions in Los Angeles County; Orange and San Bernardino Counties, San Ferando Valley; made one trip to Bakersfield 125 miles distant and one to Stockton 500 miles distant then returning to Los Angeles. I finished the season at Stockton where I stayed 18 days. Altogether I passed as practically free from Tuber Moth 74 carloads of potatoes and refused certificates on 28 carloads which were more or less infected with Tuber Moth.

Twenty-seven cars potatoes out of the above 74 carloads were shipped to Oregon, Montana, Texas, etc., and the balance of 47 cars were shipped to this State. During the season of 1918 I passed and certified 206 carloads, showing a decrease this season of about 60 per cent, occasioned by the large number of cars of old potatoes in cold storage warehouses all along this coast and also by the arrival on our markets probably two weeks earlier than usual of our local new potatoes. There was considerable Tuber Moth in Southern California again this season. In three days during the last week at Los Angeles I examined twelve cars of potatoes for one large potato shipping company and could pass none of them; some cars being very badly infected with Tuber Moth and others only slightly infected.

The Southern California potato crop was about 1200 cars this season as against 1700 cars last year. Orange and Los Angeles Counties in former years produced 700 to 900 cars of potatoes but this year the acreage was cut down 75 per cent because of the past poor yields on account of the lands being worked constantly many years and becoming exhausted. One of the principal sections this season was the San Fernando Valley, a comparatively new district being brought under cultivation and having about 4000 acres in potatoes, but in this valley the Tuber Moth has been in evidence for the past five years.

The San Joaquin County or Stockton district will have about 25,000 acres in potatoes this year, both early and late varieties, which is a one to three thousand acre increase over last year.

The average yield will be about 80 sacks per acre, the yield running as low as 40 and as high as 160 sacks per acre. Onions are yielding from 200 to 300 sacks per acre. There is one island consisting of 7,000 acres all planted to onions. These San Joaquin Delta Lands comprise 40 islands averaging from 150 to 25,000 acres each, the soil being practically all peat land, having been originally tule swamps and now reclaimed and diked by the U. S. Government. These lands are being sold for about $250.00 to $300.00 per acre. Produce buyers travel by motor boat instead of by auto, there being about 250 miles of canals or rivers. These lands are owned mostly by what are termed landlords and are being leased to Chinese, Japanese, etc., at from $15.00 to $40.00 per acre per year, leases running no longer than three years at a time, when they can be renewed. Japanese or Chinese born in the United States may buy the land outright. George Shima, a Japanese known as the California Potato King, owns two islands consisting of 7,500 acres planted practically all to potatoes, and he seems to be a big factor in the movement of the California potato crop. In many places on these islands one can with the hands push a bamboo pole down into the soil 30 feet. One can often feel the ground tremble under foot caused by the walking of a horse nearly a mile away.

All of the San Joaquin potato crop is moved to market in absolutely new bags, and in fact the potato buyers and shippers in that district will not accept potatoes in second hand bags, the higher cost during the war making no difference whatever. New bags certainly make a wonderful difference in the quick and satisfactory movement of potatoes, and I have been asked on several occasions to request our Washington potato grower to use clean, strong sacks instead of old, rotten ones which have fallen to pieces on being taken from the cars and this has happened in not a few instances in California. In California we have a good late potato market and the table variety which is in strong demand and all that remains to be done is to grade them a little better and put them in much better sacks.

January 2nd, 1920, I purchased with King County funds a Bean Giant Duplex spray machine capable of developing a pressure of 250 lbs. We used two lines of hose and Bean spray guns. We started out to use the bamboo spray rods but soon discarded them in favor of the spray guns, seeing that we could do much more effective and quicker work with the guns. This machine was used only for dormant spraying, using Rex Sulphur and Lime at 4 degrees Beaume. We sprayed the trees of 41 different growers, ranging from 5 to 1200 trees. We charged the growers actual cost for labor and material and sprayed 8,699 fruit trees on Vashon Island and at Bellevue, Washington. This spraying was intended only as a spring cleanup and we were unable to spray more than 50 per cent of the jobs offered us and could have used two machines very nicely. Some of the orchards sprayed had not received a dormant spraying for several years and were badly infected with oyster shell scale, red spider, aphis eggs, moss, lichens, etc.

While the writer was in California during May, June and July of 1920, he inspected and certified for shipment to Oregon and Washington 266 carloads of potatoes as being practically free from Tuber Moth and refused certificates on 49 carloads because of being infected with Tuber Moth. These 266 cars of potatoes averaged about two thousand dollars per car or $532,000.

DISTRICT 9.

Shipments of Fresh Fruits and Vegetables (In Carloads).

YEAR	Strawberries	Other Berries	Potatoes	Cabbage	Mixed Vegetables	Lettuce	Totals
1919	23	33	197	29	20	34	336
1920	20	16	40	72	25	80	253
Totals	43	49	237	101	45	114	589

Fruits and Vegetables Used in Manufacture of By-Products (In Tons Fresh Fruit).

YEAR	Apples	Peaches	Pears	Apricots	Strawberries	Blackberries	Raspberries	Cherries	Small Fruits	Cucumbers	Cabbage	Mixed Vegetables	Totals
1919	960	41	268	12	130	269	265	145	151	1,116	1,495	130	4,982
1920	1,909	21	482	.....	489	371	383	460	237	815	1,150	.....	6,317
Totals	2,869	62	750	12	619	640	648	605	388	1,931	2,645	130	11,299

Fruit Storage Capacity (In Boxes).

YEAR	Number of Houses	KIND OF STORAGE			Totals
		Common	Frost-Proof	Iced	
1919	3	2,363,580	53,136	1,769,277	4,185,993
1920	....	5,131,103	....	1,565,326	6,696,429

Spray Materials Used.

YEAR	LIME SULPHUR	
	Dry, Lbs.	Solution, Bbls.
1919	100	....
1920	100	....
Totals	200	....

DISTRICT NO. 10.

C. O. Weiss, District Inspector.

District 10 consists of the five counties, namely, Snohomish, Skagit, Whatcom, Island and San Juan.

The headquarters for this district was made at Everett beginning April 1st, 1920. C. O. Weiss was made District Horticultural Inspector, succeeding Mr. J. C. Eakle. At the same time E. D. Hunter was made deputy horticultural inspector of Skagit County, being located at Sedro Woolley.

To become acquainted with this district was the first step, also starting to take a census of the fruit trees and berry ranches, inspecting the markets and enforcing the horticultural laws in respect to the sale of clean fruits, also inspecting nursery stock coming in and going out of the district.

The horticultural interests of the district lies chiefly in its commercial orchards, berry ranches and home orchards.

Skagit County at present leads acreage in berries with Whatcom and Snohomish following. A great deal of interest has been created in berry growing on Whidby Island. Orcas Island, from a horticultural standpoint having several fine commercial orchards and one in particular, the Bodie pear orchard, from which pears have been shipped direct to New York restaurants for fancy trade for several years.

The largest commercial pear orchard is located at Startup, Snohomish County, and is owned by R. B. Miller. At present it consists of 160 acres, and is the largest pear orchard in the State. The varieties, Bartlett, D'Anjou, Comice, Bosc, Angouleme, Bordeaux, and Howell are grown here.

There is a forty-acre pear orchard at Lynden, Whatcom County, in charge of Mr. E. W. Bayes, consisting of one-third Bartletts, one-third Comice, and one-third D'Anjou, which is showing good results.

There is a forty-acre orchard near Ferndale belonging to Mr. C. E. Fitzgerald, consisting mostly of cherries.

The other orchards range from one to thirty acres in size, consisting either of apples, pears, cherries or prunes, and most of them are mixed or home orchards.

The largest berry tracts are owned by the W. H. Pride & Co., and amount to 300 acres, mostly raspberries, strawberries, blackberries, loganberries, currants and gooseberries, with new plantings of crabapples and prunes. At present there are about seven or eight ranches. These ranches show the best of care and return big yields.

At Monroe the Great Northern Fruit Farm owned by M. L. Monlux consists of 55 acres of raspberries, cherries, strawberries, blackcaps, loganberries, blackberries, currants, gooseberries and dewberries. The Ben Howard Fruit Farm of 40 acres consists of raspberries, cherries, strawberries and blackberries. These two fruit farms have been given excellent attention and produced great results. The fruit grown here is shipped to the markets in pony refrigerators which originated with these growers. They are growing what is known as the Texas or Stewart bush blackberry which has proved itself to be a good producer.

The sections around Anacortes, Birmingham, Sunnyside, Ferndale, and Glendale seem at present to be the large strawberry producing sections.

Everett Fruit Products Co., Everett, Wash.

While at Sumas, Nooksack, Everson, Florence, Sedro Woolley, Mt. Vernon, Burlington, Monroe, Snohomish, Oak Harbor and Coupeville, raspberries, loganberries, blackberries, currants and gooseberries are predominant.

The orchard sections seem to be from Everett to Startup, Burlington, Sedro Woolley, Ferndale, Mountain View, Laurel, Langley and Orcas Island. The big potato sections are in the Olympia, La Conner, Skagit and Cathcart flats.

A few growers have been successful with the everbearing strawberry but where water is not available at all times they have proven a failure.

In Whatcom County the growers cooperated in a plan to clean up the orchards and 59 orchards were given a dormant spray and 34 orchards the scab sprays.

Twenty-six growers in Skagit County and ten growers in Snohomish County grew sugar beets on a small scale, the season was late for planting but most of them got a good growth in the beets.

In conclusion, E. D. Hunter, Deputy Inspector of Skagit County, is to be congratulated for the fine results he has produced in said county, having covered so large a territory without the aid of a car. He stimulated the interests of the growers in both tree fruits and berries to produce better fruit.

In 1918 there were five canneries in this district, namely, the Ferndale Cannery, at Ferndale, W. H. Pride & Company, at Bellingham, the Baker Cannery at Lynden, the Arlington Cannery, at Arlington, and the Ferguson Cannery at Snohomish.

In 1919 there were three more constructed, making eight in all, the Everson Cannery, at Everson, the Bellingham Fruit Cannery, at Bellingham, and Sedro Woolley Cannery at Sedro Woolley, and the Burlington Cannery at Burlington.

The Ferndale Cannery Company has enlarged its cannery by adding a warehouse and cold storage plant to it and this enables them to take in a larger amount of products.

The Everett Cannery Company has also enlarged its cannery this year. If the acreage in berries warrants it, a barreling station will be placed on Whidbey Island.

The following table shows the orchard census of these counties as far as the territory has been covered:

CENSUS REPORT OF SNOHOMISH COUNTY.

Apples	Bearing	16,237	Trees
Apples	Non-bearing	402	Trees
Pears	Bearing	4,489	Trees
Pears	Non-bearing	286	Trees
Cherries	Bearing	2,443	Trees
Cherries	Non-bearing	242	Trees
Prunes	Bearing	3,673	Trees
Prunes	Non-bearing	148	Trees
Peaches	Bearing	192	Trees
Quinces	Bearing	83	Trees
Nuts	Bearing	25	Trees
Apricots	Bearing	1	Tree
Total		28,221	Trees

Strawberries	218	Acres
Raspberries	157	Acres
Loganberries	16	Acres
Blackberries	35	Acres
Gooseberries	10	Acres
Currants	8	Acres
Total	444	Acres

4,113 acres comprise the total acreage of farms visited.

CENSUS REPORT OF WHATCOM COUNTY.

Apples	Bearing	12,089	Trees
Apples	Non-bearing	879	Trees
Pears	Bearing	7,316	Trees
Pears	Non-bearing	35	Trees
Cherries	Bearing	5,598	Trees
Cherries	Non-bearing	48	Trees
Prunes	Bearing	5,399	Trees
Prunes	Non-bearing	468	Trees
Peaches	Bearing	45	Trees
Quinces	Bearing	27	Trees
Apricots	Bearing	1	Tree
Nuts	Bearing	32	Trees
Total		31,937	Trees

Strawberries	135	Acres
Raspberries	210	Acres
Loganberries	47	Acres
Blackberries	36	Acres
Gooseberries	15	Acres
Currants	20	Acres
Total	463	Acres

5,496 acres comprise the total acreage of farms visited.

CENSUS REPORT OF ISLAND COUNTY.

Apples	Bearing	1,133	Trees
Apples	Non bearing	12	Trees
Pears	Bearing	698	Trees
Cherries	Bearing	237	Trees
Cherries	Non-bearing	180	Trees
Prunes	Bearing	466	Trees
Prunes	Non-bearing	11	Trees
Peaches	Bearing	4	Trees
Quinces	Bearing	3	Trees
Total		2,744	Trees

Strawberries	18	Acres
Raspberries	9	Acres
Loganberries	40	Acres
Blackberries	1	Acre
Currants	1	Acre
Gooseberries	7	Acres
Total	76	Acres

598 acres comprise the total acreage of farms visited.

CENSUS REPORT OF SKAGIT COUNTY.

Apples	Bearing	7,800	Trees
Apples	Non-bearing	1,694	Trees
Pears	Bearing	1,674	Trees
Pears	Non-bearing	114	Trees
Cherries	Bearing	3,756	Trees
Cherries	Non-bearing	366	Trees
Prunes	Bearing	1,745	Trees
Prunes	Non-bearing	366	Trees
Peaches	Bearing	64	Trees
Quinces	Bearing	72	Trees
Apricots	Bearing	73	Trees
Nuts	Bearing	46	Trees
Total		17,770	Trees

Strawberries	388	Acres
Raspberries	432	Acres
Blackberries	45	Acres
Loganberries	155	Acres
Gooseberries	17	Acres
Currants	15	Acres
Total	1,052	Acres

12,233 acres comprise the total acreage of farms visited.

VARIETIES OF FRUIT WHICH SEEM BEST ADAPTED TO THIS DISTRICT.

Apples—Yellow Transparent, Gravenstein, Wealthy, King, Wagener, Glowing Coal, Northern Spy, Winter Banana.

Pears—Bartlett, Comice, Bosc, D'Anjou, Worden Seckel, Clapp's Favorite, Flemish Beauty, Angouleme.

Cherries—*Sweet*—Royal Anne, Bing, Lambert, Black Republican. *Sour*—Montmorency, Early Richmond, Morello, Wragg.

Plums and Prunes—Italian, Peach, Damson, Silver, Egg, Golden Drop.

Quince—Champion, Orange.

Peaches—Alexander, Early Crawford.

Grapes—Island Belle, Delaware, Niagara.
Strawberries—Marshall, Magoon, Gold Dollar.
Raspberries—Cuthbert, Antwerp.
Black Rasperries—Cumberland, Gregg.
Blackberries—*Trailing*—Evergreen, Himalaya. *Bush*—Texas, Kittatiny.
Gooseberries—Oregon Champion, Downing.
Currants—Perfection, Victoria, Cherry, Wilder.
Loganberries.

THE HORTICULTURE OF SKAGIT COUNTY.

E. D. Hunter, County Horticultural Inspector.

The horticulture of Skagit County is probably different from almost any other county in the State of Washington. To begin with, there are no commercial orchards at all. There are, however, approximately 3,000 acres of what could be classified as orchards but these are entirely home orchards. Of the fruit produced in these home orchards, apples are far in preponderance with cherries, pears and prunes following. Much can be done in the way of general improvement in these home orchards and in educating the owners to give their trees better care and attention. This year a survey was made of the varieties of different fruits adapted for this part of the State and it is hoped hereafter to correctly advise farmers in this respect.

The year 1920 saw what will probably prove to be Skagit County's chief horticultural crop, that is, small fruits. Extensive plantings of strawberries, raspberries and blackberries were made in the past spring and indications point to even greater plantings this fall and spring. The climate and soil of Skagit County seemed to be ideal for the production of heavy yields of small fruits. In this county are found many hundreds of acres of sandy loam, the ideal berry soil. The present acreage in berries of all kinds is around 1,100. To stimulate the planting of berries and to utilize the products therefrom, two large modern canneries plan to use all classes of fruit and many classes of vegetables as well.

Skagit County has long been known for the potatoes which it produces. The yield of potatoes per acre on a general average is something which very few other communities can equal. Some of the chief varieties grown are: Early Rose, Irish Beauty, Pride of Multnomah, Beauty of Hebron, Pride of New York, Rural New Yorker, and Crown Jewel. Here again much can be done along educational lines to assist the farmers to reduce the amount of scab, rhizoctonia, wilt, etc. Potato acreage this year was close to 2,000 acres.

Skagit County has still another claim for horticultural distinction. That is its production of seeds, not only grain but garden seeds as well. In fact a very high percentage of all garden seeds produced in the State should be credited to Skagit County. Chief among the garden seeds are various varieties of cabbage, peas, beans, beets, spinach, carrots, parsnips, mangels, etc. There are also good possibilities in the production of flower seeds as well and this year several seed plots for sweet peas were planted.

Results of Berries Kept in Cold Storage.

In view of the recent announcement of the United States Department of Agriculture of the commercial possibilities of preserving berries of various kinds by cold storage, a brief resume of the observation made in connection with holding small fruit exhibits for Skagit County Fair will be of interest at this time. Because of the increasing importance of small fruits in Skagit County, it was desired to make a special showing of berries at the County Fair and cold storage was deemed the only reliable method of keeping them until the fair date.

The berries placed in storage were various varieties of strawberries, raspberries, and loganberries, as well as currants, gooseberries and blackberries. Two different plants were used; one with a temperature of 32 degrees, and the other with a temperature of about 10 degrees lower. In practically every case, the lower temperature proved to be the best. Of all the berries, strawberries, currants and loganberries were preserved the best of all. Raspberries seemed to lose their shape while gooseberries and cherries their color. Cherries also lost their natural flavor and took on a dried taste.

From these observations it would seem that strawberries offer the greatest commercial possibilities. They seem to hold their shape, color and flavor better than any of the other fruits. All broke down very quickly once they were taken out of storage. It would therefore seem that to successfully preserve berries of any kind by this method, their immediate utilization upon being taken from storage would be essential.

The writer was the first horticultural worker employed under the direction of the State Department of Agriculture by Skagit County. This work was started in the county chiefly because of the interest aroused in small fruit culture during the past spring and because it was felt by those most deeply interested that the berry growers needed and were entitled to expert advice and assistance.

Upon locating in the county the first of April of the present year, all assistance possible was first rendered berry growers. From the berry growers, the work branched out to assisting in an educational way, the farmers having home orchards with such problems as insect pests, diseases, spraying, pruning, cover crops, and fertilizers, etc. Potato growers were also assisted as much as possible. Because there is no county agent for Skagit County, the writer has endeavored to advise the farmers to the best of his ability along lines other than purely horticultural. This fall more rigid inspection of fruit for sale in grocery stores, fruit stands, etc., has been instituted. As new nursery stock is brought in during the planting season, this winter and spring, it is the intention to thoroughly inspect it upon arrival for diseases and insect pests. The lack of transportation facilities has considerably handicapped the work, however, but this is a condition which it is hoped can be remedied in the near future.

As much assistance as possible was rendered the Skagit County Fair Association for the 1920 Fair. This was not only along horticultural lines, but along agricultural as well. Following the County Fair sufficient funds were raised so that a county exhibit could be installed at the 1920 Washington State Fair. The success of this exhibit was very marked.

The work for the coming year will be continued and built up along the lines already started. It is hoped that better tree fruits can be grown here because of the increased interest by the farmers in giving the orchards better care and attention. There is a strong possibility that a demonstration berry plot can be developed during the coming year and made an asset to the berry growers and to the county. Another endeavor will be made to introduce

generally the grading and certifying of potato shipments as well as the growing of better potatoes.

In conclusion, the writer wishes to express his appreciation of the advice and assistance given by Mr. C. O. Weiss, District Horticulturalist. It is a real pleasure to be able to work under such conditions where wholehearted approval and cooperation is given all work and plans.

Shipments of Fresh Fruits and Vegetables (In Carloads).

YEAR	
1919............. 1920.............	See table of fruits and vegetables used by canneries.

Fruits and Vegetables Used in Manufacture of Fruit Products. (In Tons Fresh Fruit).

YEAR	Apples	Peaches	Pears	Plums & Prunes	Apricots	Strawberries	Blackberries	Raspberries	Cherries	Grapes	Loganberries	Small Fruits	Beans	Rhubarb	Mixed Vegetables	Totals
1919...........................	311	10	149	286	10	32	116	203	332	....	41	16	159	14	7	1,686
1920...........................	2,566	21	350	211	12	46	354	233	488	33	63	54	333	43	33	4,840
Totals..............	2,877	31	499	497	22	78	470	436	820	33	104	70	492	57	40	6,526

Fruit Storage Capacity (In Boxes)..

YEAR	Number of Houses	KIND OF STORAGE			Totals
		Common	Frost-Proof	Iced	
1919	....	....	....	....	....
1920	....	240,800	....	167,160	407,960

Greenhouses.

YEAR	No. of Houses	Assessed Valuation	Square Feet of Glass	Volume of Business
1919	....	....	....	....
1920	4	$10,470 00	31,500	$25,000 00

Spray Materials Used.

YEAR	LIME SULPHUR		Number of Spray Machines Used
	Dry, Lbs.	Solution, Bbls.	
1919	150	48	6
1920	150	114	6
Totals	300	162	12

Grade and Pack Conference.

Chapter 166, Section 17 of the Laws of 1915, requires the Commissioner of Agriculture to hold a Grade and Pack Conference annually in order that he may advise with fruit growers, officers of associations, or organizations, distributors, or others interested in the growing and marketing of fruit as to the general conditions of the industry, after which he shall in the month of December of each year, make, adopt, issue and publish general rules and regulations governing the packing of apples and establishing and defining grades thereof for the ensuing year. This conference was held each year and grades promulgated.

December 4th, 1919, the conference was held at Spokane. It was made up to delegates from the states of Washington, Idaho, Montana and Oregon, all of whom entered into the discussions of necessary grade requirements for the entire Northwest. Grades were formulated which were afterwards adopted by the several states so that the states of Washington, Oregon and Idaho are operating under the same grade regulations and stand as a unit. Montana's law fixes the grade and could not be changed.

Smudge Pots—Orchard Heating.

Some seasons there is a considerable injury and loss to the fruit crops in some sections from the result of spring frosts, hence the use of the smudge pots has been considered by some growers. In the spring of 1919, Mr. A. S. Caton of Olympia installed a system in his pear orchard consisting of about thirteen acres. The cost of the installation including 1,300 smudge pots, a large steel distributing tank (mounted), a concrete supply reservoir, holding a carload of oil, was about $1,600. He fired the pots thirteen times, and used about 500 gallons of oil and believes that he saved his pear crop, as some nights in adjoining fields ice formed on standing water.

The Arcadia Orchard Company of Deer Park installed a much larger outfit. They have 37,000 smudge pots of one and two-gallon size, at approximately 38 cents each. They used on an average 40 pots per acre, but believe for the best protection double the number should be used. The two-gallon pots are believed to give the best results as they will burn about three hours which should control atmospheric temperatures until the danger point passes.

The pots were lighted only five times. On one occasion, May 21st, outside the potted area the temperature reached 26 but no damage was done inside the area. On May 27th the temperature reached 24 degrees outside the potted area and inside the smudged area slight damage was done in the lower spots. It was found that outside the smudged area practically every blossom was killed at this time. With the number mentioned, they were able to hold the temperature inside the smudged area only three degrees above the unsmudged area. This demonstrated that the number should be doubled if severe frost conditions are to be combatted. One man with a torch will light from 400 to 500 pots an hour. Crude oil (calol) of 24 degrees test was used at a cost of 9½ cents per gallon. This made a total cost of $28 per acre, including all equipment; without equipment, $16 per acre, or in other words for about $30 per acre they saved about 350 or 400 carloads of fruit, which shows that in frosty areas the smudge pot may be considered an economical adjunct.

Weekly Reports.

The following compilation shows some of the activities of the inspectors. They make weekly reports showing in a way the nature of the inspections in the field, the scope of the work, and the territory covered. Any unusual conditions are reported, which keeps us in touch with the entire territory.

TABULATED REPORT OF THE ACTIVITIES OF THE LOCAL INSPECTORS.
TOTALS. DISTRICTS 1 TO 10 INCLUSIVE.

District	YEAR	DAYS IN		Bulletins Sent Out	MILEAGE			Acres Inspected, Orchards	NURSERIES		Circular Letters Sent Out	Farms Visited	PACKAGES		CARLOTS	
		Office	Field		Auto	Rail	Other		Acres	Number			Inspected	Condemned	Inspected	Condemned
1	1919	109½	598½	2,860	15,680	1,431	815	10,357	5	8	1,782	2,049	3,964	2,261	8	2
1	1920	91½	686	3,465	24,946	1,882	43	2,573	113	5	1,664	2,372	237,821	69,602	102	2
2	1919	190½	320	516	13,050	......	34	7,546	......	27	277	1,771	17,229	4,272	......	......
2	1920	220	698	1,727	24,665	311	11	18,080	77	......	378	2,733	9,629	6,432	......	......
3	1919	127	228	372	7,686	565	......	10,840	......	......	1,080	1,041	1,129	2,419	......	......
3	1920	77½	316	3,919	13,078	487	110	11,150	......	11	946	1,148	565,380	23,605	......	......
4	1919	58½	611½	......	16,828	......	150	24,473	......	......	148	1,707	126,168	12,021	......	......
4	1920	50½	563	14	5,825	333	......	6,318	......	......	15	2,338	371,802	17,150	......	......
5	1919	109	1,857	185	59,021	1,928	510	27,674	1,895	1	125	2,793	1,546,208	119,794	11	......
5	1920	297½	1,510	975	60,821	1,599	......	18,257	1	85	239	2,219	1,608,044	191,953	......	......
6	1919	167½	340	5,436	8,062	989	75	2,299	5	......	295	259	77,639	1,232	......	......
6	1920	201½	541	693	11,188	3,593	103	7,545	......	32	836	374	305,677	8,216	......	......
7	1919	55	263	512	10,643	374	......	......	......	......	533	582	85,382	437	......	......
7	1920	48	244	336	11,389	472	......	32	......	......	251	450	1,110	403	......	......
8	1919	4	87	7	4,270	670	530	90	......	......	5	16	......	......	......	......
8	1920	13½	124	......	5,895	997	187	......	......	......	......	......	47,443	......	......	......
9	1919	40½	222½	430	8,396	196	86	149	......	43	818	854	12,406	4,927	48	7
9	1920	26	38½	165	1,060	......	......	......	......	......	681	......	11,052	1,202	8	......
10	1919	12½	115	220	3,647	50	......	......	......	......	170	370	1,220	......	3	......
10	1920	42	161	956	7,066	697	104	889	......	74	649	835	1,700	......	......	......
	Totals—1919	1,924	9,524	22,788	312,736	20,174	2,758	148,272	2,096	236	9,892	23,911	5,020,516	465,926	234	11
	Totals—1920	1,378	5,676	62,021	231,240	26,410	17,691	358,952	7,147	1,488	16,227	40,868	282,285	66,645	......	......

TABULATED REPORT OF THE ACTIVITIES OF THE DISTRICT INSPECTORS.

DISTRICTS 1 TO 10 INCLUSIVE.

District	YEAR	District Inspectors	DAYS IN		Bulletins Sent Out	MILEAGE			Acres Inspected, Orchards	NURSERIES		Circular Letters Sent Out	Farms Visited	PACKAGES		CARLOTS	
			Office	Field		Auto	Rail	Other		Acres	Number			Inspected	Condemned	Inspected	Condemned
1	1919............	Miller and Wood......	96	158½	2,544	7,934	1,303	222	1,273	....	3	737	85	148	890	7	3
1	1920............	Wood.........	72½	266½	1,875	10,459	1,586	33	200	....	5	1,559	699	46,750	3,738	....	....
2	1919............	Kelley.........	163	55½	516	4,039	....	34	2,185	....	....	259	129	22	16	....	....
2	1920............	Kelley.........	197½	129	1,149	7,806	236	....	3,485	....	....	366	212	....	....	....	....
3	1919............	Powell.........	112½	170½	372	7,461	565	....	10,038	....	....	1,080	691	1,129	2,419	....	....
3	1920............	Bailey.........	64	222	3,447	10,043	2,622	85	9,583	....	8	941	694	288,091	4,977	....	....
4	1919............	Darlington....	57½	110½	....	4,373	....	....	1	....	....	148	80	30,010	1,458	....	....
4	1920............	Darlington....	....	....	....	....	....	....	....	....	....	....	....	33,011	1,604	....	....
5	1919............	Wood, Miller and Robinson..	86	301½	185	17,352	1,083	130	11,864	1,820	....	....	948	33,398	5,779	....	....
5	1920............	Robinson.....	130½	197	930	12,802	1,179	....	....	....	....	....	317	....	....	6	....
6	1919............	Fletcher......	95	82½	4,936	4,909	181	75	900	5	....	225	79	450	27	....	....
6	1920............	Fletcher......	81	161	95	6,102	2,618	68	3,221	....	2	620	77	12,057	704	....	....
7	1919............	Perry.........	55	263	512	10,643	374	....	....	....	....	533	582	85,382	437	....	....
7	1920............	Perry and Albert......	47	177½	336	10,321	145	....	32	....	....	310	351	825	403	....	....
8	1919............	Huff..........	4	87	7	4,270	670	530	90	....	....	5	16	....	....	....	....
8	1920............	Huff..........	13½	124	....	5,895	997	187	....	....	....	....	....	47,443	....	....	....
9	1919............	Rhodes.......	46	254½	430	6,010	145	....	....	....	25	850	18	7,216	4,927	35	....
9	1920............	Rhodes.......	26	38½	165	1,060	....	....	....	....	....	681	....	1,052	1,202	....	....
10	1919............	Eakle.........	9½	91	3,456	....	....	....	....	....	....	168	137	1,220	....	....	....
10	1920............	Weiss.........	29½	79½	948	4,249	90	44	....	....	20	598	303	....	....	....	....
	Totals......	....	1,386	2,920½	18,447	139,184	13,794	1,408	42,922	1,825	63	9,080	5,568	588,204	28,581	78	3

Fruit Products.

The fruit product industry has made rapid gains in the principal fruit sections during the past two years. The greatest growth was made in 1919. The demand for these food products during the war period stimulated their manufacture until all sections of the state where the tree fruits or small fruits are successfully grown became interested and many new plants of various kinds were erected and put into operation. This made a big demand for the cull apples at prices ranging from eight to twenty dollars per ton, twenty dollars being paid for sorted culls which could be placed in cold storage until such time as they were needed for sweet cider and similar products.

In 1919 many carloads were sent out of the state for cider and other products under bonds of $500 per car, guaranteeing that they would be used for the manufacture of the product for which they were purchased. Oregon and Idaho took large quantities of these apples and several carloads were shipped into California, and requests were received for car lots from points as far east as Dunkirk, New York. The manufacture of the different small fruit jams is one of the recent promising new industries, and when placed before the trade, the demand for the Washington jams made from strawberries, raspberries, loganberries and blackberries has exceeded the supply. This has encouraged the planting of small fruits until the aggregate of the berry fields has more than doubled during the past year. This development is covering the entire coast territory, and makes it possible to bring vast areas of the cut-over lands into highly productive fields. Canning factories are springing up in all sections where the development warrants which makes a ready market for the crop at prices which are highly remunerative. This is true with all kinds of small fruit.

The following tables show the amount of fruit consumed for fruit products:

RECAPITULATION—FRESH FRUITS AND VEGETABLES USED IN MANUFACTURE OF FRUIT PRODUCTS

(In Tons of Fresh Fruit.)

District	YEAR	Apples	Peaches	Pears	Plums and Prunes	Cherries	Apricots	Grapes	Straw-berries	Rasp-berries	Blackberries
1	1919	1,129	......	54½	18½	310	......	......	......	......	......
1	1920	2,350	......	95	20	380	......	......	......	......	......
2	1919	7,170	......	74	1¼	164	......	......	......	......	......
2	1920	5,680	......	......	......	......	......	......	......	......	......
3	1919	780	......	......	......	......	......	150	......	......	......
3	1920	1,380	......	......	......	......	......	425	......	......	......
4	1919	5,264	90	150	4½	50	20	......	......	......	......
4	1920	12,347	......	......	......	......	......	......	......	......	......
5	1919	37,356	121½	2,014	......	588	......	......	......	......	......
5	1920	34,450	925	2,225	500	350	......	......	......	......	......
6	1919	......	......	400	......	450	......	......	40	200	40
6	1920	1,500	......	400	......	400	......	......	50	140	50
7	1919	4,488	70	753¾	85	¾	......	......	75	60	372
7	1920	4,437	......	750	4½	182½	......	......	186¼	152	311
8	1919	2,464	153	924	......	95	......	5	118	1,070	1,403
8	1920	5,178	346	1,002	......	451	151	6	565	1,706	2,202
9	1919	960	41	268	......	145	12	......	130	265	269
9	1920	1,909	21	482	......	460	......	......	489	388	371
10	1919	311	10	149	286	332	10	......	82	203	116
10	1920	2,566	21	350	211	488	12	33	46	233	354
	Totals—1919	59,922	485½	4,478¼	345¼	2,184¾	42	155	390	1,798	2,220
	Totals—1920	71,797	1,313	5,304	735½	2,711½	163	464	1,336¼	2,614	3,288

FRESH FRUITS AND VEGETABLES USED IN MANUFACTURE OF FRUIT PRODUCTS—Continued.

(In Tons of Fresh Fruit.)

District	YEAR	Loganberries	Mixed Small Fruits	Potatoes	Cabbage	Cucumbers	Rhubarb	Tomatoes	Beans	Mixed Vegetables	Totals
1	1919									425	1,987
1	1920							400			8,245
2	1919		15					473		209½	8,106¾
2	1920										5,680
3	1919										930
3	1920										1,805
4	1919									150	5,728½
4	1920										12,347
5	1919			1,660						160	41,899½
5	1920										38,450
6	1919								70	400	1,600
6	1920								50		2,590
7	1919									163½	6,018
7	1920	12¾	2							20	6,058
8	1919	109	120				297			199	6,952
8	1920	603	129							527	12,866
9	1919		151		1,495	1,116				130	4,982
9	1920		287		1,150	815					6,317
10	1919	41	16				14		159	7	1,686
10	1920	63	54				43		333	33	4,840
	Totals—1919	150	302	1,660	1,495	1,116	311	473	229	1,844	79,889¾
	Totals—1920	678¾	422		1,150	815	43	400	383	580	94,198

RECAPITULATION—SHIPMENTS OF FRESH FRUITS AND VEGETABLES (In Carloads).

District	YEAR	Apples	Peaches	Pears	Plums and Prunes	Cherries	Apricots	Grapes	Strawberries	Raspberries	Blackberries	Loganberries	Gooseberries
1	1919	176	104	19	162	77	6	10	....	....	....	....	....
1	1920	907	51	13	270	95	8	2	....	....	....	....	....
2	1919	1,282	....	7	11	....	....	....	....	....	....	....	....
2	1920	1,668	60	15	87	2	1	....	....	....	....	....	....
3	1919	655	7	145	7½	4	....	17	30	....	....	....	....
3	1920	1,728	330	261	15	30	5	36	42	....	....	....	....
4	1919	7,908	216	414	11	85	40	....	....	....	....	....	....
4	1920	12,476	378	471	75	75	142	4	....	....	....	....	....
5	1919	7,105	732	1,100	109	117	12	130	....	....	....	....	....
5	1920	9,701	2,079	1,470	109	139	....	233	....	....	....	....	....
6	1919	248	3	26	14	....	....	8	100	....	....	....	....
6	1920	685	3	39	....	....	1	8	13	....	....	....	....
7	1919	....	....	....	....	....	....	228	7	....	....	....	....
7	1920	....	....	....	....	....	....	24	4	....	....	....	....
8	1919	....	....	....	....	....	....	....	....	....	....	....	....
8	1920	5	....	2	2	3	....	....	53	58	61	5	2
9	1919	....	....	....	....	....	....	....	23	....	....	....	....
9	1920	....	....	....	....	....	....	....	20	....	....	....	....
*10	1919	....	....	....	....	....	....	....	....	....	....	....	....
*10	1920	....	....	....	....	....	....	....	....	....	....	....	....
	Totals—1919	17,374	1,062	1,711	304½	283	58	183	160	....	....	....	....
	Totals—1920	27,170	2,901	2,271	558	344	157	302	132	58	61	5	2

* See Table of Fruits used by Canneries.

SHIPMENT OF FRESH FRUITS AND VEGETABLES—Continued.

(In Carloads.)

District	YEAR	Dried Prunes (Tons)	Dried Apricots (Tons)	Small Mixed Fruits	Potatoes	Onions	Egg Plant	Cabbage	Rhubarb	Tomatoes	Celery	Parsnips	Carrots
1	1919			9	43	516			67	26			
1	1920			137	41	616		27	60	13		3	17
2	1919			39									
2	1920			114	201								
3	1919			4	24	1	6			1½			
3	1920				54	1	10			1			
4	1919			766									
4	1920												
5	1919												
5	1920												
6	1919	† 6,700	† 20	5	695	31		20		8			
6	1920	† 2,050	† 31	6	583	19		33		10			
7	1919				10								
7	1920												
8	1919												
8	1920				60			60	55		5		
9	1919			33	197			29					
9	1920			16	40			72					
*10	1919												
*10	1920												
	Totals—1919	† 6,700	† 20	856	969	548	6	49	67	35½			
	Totals—1920	† 2,050	† 31	278	979	636	10	192	115	24	5	8	17

* See Table of Fruits used by Canneries.

† Tons (not included in carload lot totals).

SHIPMENT OF FRESH FRUITS AND VEGETABLES—Continued.

District	YEAR	Spinach	Asparagus	Cantaloupes	Watermelons	Table Beets	Cucumbers	Cranberries	Almonds (Tons)	Walnuts (Tons)	Filberts (Tons)	Mixed Vegetables	Lettuce	Totals
1	1919	26	9	....	....	....	....	....	....	....	....	....	....	1,250
1	1920	28	25	....	....	5	....	....	....	....	....	....	....	2,318
2	1919	....	....	....	....	....	....	....	....	....	....	....	....	1,329
2	1920	....	....	....	....	....	....	....	....	....	....	....	....	2,148
3	1919	....	6	10	20	....	....	....	....	....	....	3	....	941
3	1920	....	7	8	1	....	....	....	....	....	....	3	....	2,532
4	1919	....	....	....	....	....	....	....	....	....	....	621	....	10,061
4	1920	....	....	....	....	....	....	....	....	....	....	....	....	13,621
5	1919	....	....	260	231	....	....	....	....	....	....	....	....	9,796
5	1920	....	....	300	100	....	....	....	....	....	....	....	....	14,131
6	1919	....	....	1	....	....	....	....	† 30	† 14	† 8	¼	....	1,154¼
6	1920	....	....	2	....	....	....	....	....	....	....	½	....	1,397½
7	1919	....	....	....	....	....	....	53	....	....	....	....	....	93
7	1920	....	....	....	....	....	....	50	....	....	....	....	....	78
8	1919	....	....	....	....	....	....	....	....	....	....	....	....	....
8	1920	....	4	....	....	....	10	....	....	....	....	15	....	400
9	1919	....	....	....	....	....	....	....	....	....	....	20	34	336
9	1920	....	....	....	....	....	....	....	....	....	....	25	80	253
*10	1919	....	....	....	....	....	....	....	....	....	....	....	....	....
*10	1920	....	....	....	....	....	....	....	....	....	....	....	....	....
	Totals—1919	26	15	271	251	....	....	53	† 30	† 14	† 8	644¼	34	24,960¼
	Totals—1920	28	36	310	101	5	10	50	....	....	....	43½	80	36,878½

* See Table of Fruits used by Canneries.
† Tons (not included in carload lot totals).

LISTS OF FRUIT PRODUCTS PLANTS.

District.	**Name of Company and Location of Plant.**	**Kind of Plant.**
1.	Blalock Vinegar Company, Walla Walla County	Vinegar
	C. K. Gilkeson, Walla Walla County	Juice
	Walla Walla Brewery, Walla Walla County	Juice
	Dunstan Cannery, Asotin County	Cannery
	Hill's Cannery, Asotin County	Cannery
	Oregon Packing Co., Asotin County	Cannery
	Petrie's Cannery, Asotin County	Cannery
	State Penitentiary, Walla Walla County	Evaporating
	Luther Dehydrator, Walla Walla	Evaporating
	Crystal Beverage Co., Walla Walla	Juice
	Walla Walla Vinegar Co., Walla Walla	Vinegar
	Blalock Evaporator Co., Walla Walla	Evaporator
2.	Cusick's Cider Works, Spokane	Juice
	Inland Cider Works, Spokane	Juice
	Inland Products Co., Spokane	Juice
	Keller-Lorenz Co., Spokane	Vinegar
	Salter's Cider Works, Spokane	Juice
	Seiter's Cider Works, Spokane	Vinegar
	Spokane Brewing & Malting Co., Spokane	Juice
	Spokane Cider Works, Spokane	Juice
	Stinger, C. J., Spokane	Juice
3.	Prosser Evaporating Co., Prosser	Evaporator
	Church Manufacturing Co., Kennewick	Grape Juice
	Columbia Fruit Products Co., Hanford	Evaporator
	Prosser Preserving Co., Prosser	Cider, Jelly and Apple Butter
4.	Shepard Fruit Products Co., Wenatchee	Prepared Fruit
	Washington Dehydrated Co., Wenatchee	Dehydrated
	Phez Co., Wenatchee	Juice
	Northwest Evaporating Co., Wenatchee	Evaporating
	Clark-Chelan, Chelan	Evaporating
	Perry & Harrison, Omak	Juice
5.	Washington Dehydrated Food Co., Yakima	Dehydrated
	California Packing Co., Yakima	Evaporating
	Selah Fruit Growers, Inc., Selah	Evaporating
	Cloud-Thomas Co., Selah	Evaporating
	Buena Evaporating Co., Buena	Evaporating
	F. M. Martin, Zillah	Evaporating
	F. M. Martin, Grandview	Evaporating
	Washington Dehydrated Food Co., Grandview	Dehydrated
	Libby, McNeil & Libby, Yakima	Cannery
	Younglove & Co., Sunnyside	Cannery
	Yakima Food Products Co., Yakima	Cider and Vinegar
	Jones Bros., Yakima	Vinegar
	Lust & Walters, Processing Co., Yakima	Jelly and Apple Butter
6.	Oregon Packing Co., Vancouver	Cannery
	Wineberg's Bottling Works, Vancouver	Juice
7.	The Phez Co., Olympia	Juice
	Randle Canning Co., Randle	Cannery
	Lewis County Canning Co., Chehalis	Cannery
	Pe Ell Canning Co., Pe Ell	Cannery
	Olympia Canning Co., Olympia	Cannery
	Northwest Fruit Products, Olympia	Juices
	South Bend Canning Co., South Bend	Juices
	Evaporator (E. T. Huting), Silver Creek	Evaporating
	Deem Greer Canning Co., Mossy Rock	Cannery
8.	Puyallup & Sumner Canning Co., Puyallup	Cannery
	H. A. Baker & Co., Sumner	Cannery
	A. Rupert Co., North Puyallup	Cannery
	Northern Pickle Co., Tacoma	Cannery
	Paul Names Co., Tacoma	Juice
	Olympic Canning Co., Port Townsend	Cannery
	Port Angeles Cannery, Port Angeles	Cannery
9.	National Fruit Canning Co., Seattle	Cannery
	Seattle & Puget Sound Packing Co., Seattle	Cannery
	Libby, McNeil & Libby, Seattle	Cannery
	Coast Conserve Co., Seattle	Cannery
	Bergaust Davis & Co., Seattle	Cannery
	Pacific Coast Syrup Co., Seattle	Juice

District.	Name of Company and Location of Plant.	Kind of Plant.
10.	Ferndale Cannery Co., Ferndale	Cannery
	W. H. Pride & Co., Bellingham	Cannery
	Baker Cannery Co., Lynden	Cannery
	Arlington Cannery, Arlington	Cannery
	Ferguson Cannery, Snohomish	Cannery
	Everson Cannery, Everson	Cannery
	Bellingham Fruit Co., Bellingham	Cannery
	Blaine Fruit Cannery, Blaine	Cannery
	Sedro Woolley Cannery, Sedro Woolley	Cannery
	Burlington Cannery, Burlington	Cannery

Storage.

Probably there has not been a greater increase in any one of the necessary adjuncts to fruit growing than has been made in up-to-date storage facilities. Yet there are some sections where the storage capacity is entirely inadequate. With the uncertain transportation problems which are to be met every year, storage facilities for the accommodation of at least 50 per cent of the crop are indispensable. Every grower should have storage for a portion of his crop, or else belong to an organization which has ample facilities. Expensive ice storage structures are not altogether necessary, but they should be built so as to protect the fruit from sudden extreme drops in temperature. As the orchards become older the yields are greater, which makes increased demands upon the transportation companies and storage facilities.

Air-cooled storages are being built under specifications furnished by the Federal Bureau of Markets, which very successfully carry the fruit through the winter months. The following tables show the available storage capacity:

RECAPITULATION—FRUIT STORAGE CAPACITY (In Boxes)

District	YEAR	Number of Houses	KIND OF STORAGE			Totals
			Common	Frost-Proof	Iced	
1	1919	19	175,392	45,360	85,428	306,180
1	1920	13	142,000	76,000		218,000
2	1919	17	381,727	626,099	94,500	1,102,326
2	1920	24	475,947	946,387	94,500	1,516,834
3	1919	28	181,000	267,000	18,000	466,000
3	1920	28	181,000	267,000	71,000	519,000
4	1919	38	229,950	1,086,770	108,200	1.423,920
4	1920		728,950	1,086,770	608,200	2,423,920
5	1919			3,165,970	1,587,600	4,753,570
5	1920			3,625,130	1,915,490	5,540,620
6	1919	12	84,000	40,000		124,000
6	1920	12	84,000	40,000		124,000
7	1919	13	44,000	102,300	57,200	203,500
7	1920	51	413,000	157,000	140,000	710,000
8	1919					
8	1920	4	37,300		4,200	41,500
9	1919	3	2,363,580	53,136	1,769,277	4,185,993
9	1920					
10	1919					
10	1920					
	Totals—1919	*130	3,458,649	5,386,635	3,720,205	12,565,489
	Totals—1920	* 85	2,062,197	6,198,287	2,833,390	11,093.874

* And over.

Nursery Inspection.

The Nursery Inspection is mostly done at digging time. In the larger nurseries an inspector is stationed at the nursery during the active seasons of operations, and the stock is all carefully inspected while being dug and packed. Imported shipments are inspected at destination.

Stock coming into the state from nurseries not licensed to operate in the state is inspected at destination. A fee of ten per cent of the invoice is charged, 50 cents being the minimum fee. For licensed nurseries this service is gratis. Parcel post packages are inspected and stamped at the post office.

The following lists show the nurseries licensed to operate in the state for the years 1919 and 1920. The license fee is $5.00 per year, to be accompanied by an annual surety bond of $1,000.00.

LIST OF NURSERYMEN LICENSED TO DO BUSINESS IN THE STATE OF WASHINGTON FOR THE YEAR 1919.

ADAMS COUNTY.

J. C. Kittel	Ritzville

ASOTIN COUNTY.

Lewiston-Clarkston Improvement Co.	Clarkston

BENTON COUNTY.

Home Nursery Co.	Richland
Prosser Nurseries	Prosser

CHELAN COUNTY.

Columbia & Okanogan Nursery Co., Inc.	Wenatchee

CLARKE COUNTY.

Andrew Hanson	Vancouver
Frank Luepke	Vancouver

KING COUNTY.

Aabling-Boyce Seed Co., Inc., 89 W. Pike St.	Seattle
Christian Bauer, 530 28th Ave. No.	Seattle
C. H. Bear, 6420 Flora Ave.	Seattle
E. F. Betz, P. O. Box 318	Renton
J. J. Bonnell, 2601 E. Galer St	Seattle
Capital Hill Floral Co., 1524 15th Ave. No	Seattle
Christopher Nurseries	Christopher
H. O. Dutton, 3822 Ashworth Ave.	Seattle
Evergreen Nursery, Third Ave. and Pine St.	Seattle
Fremont Floral Co., 1401 Trenton St.	Seattle
M. Furuya Co., Inc., 216 Second Ave. So	Seattle
H. M. Hanson, 6539 California Ave	Seattle
Hollywood Gardens, Inc., 1534 Second Ave	Seattle
Island Nurseries and Fruit Farm	Vashon
Peter Kempf, 3411 Belvedere Ave	Seattle
Lakeview Rose Gardens, 1601 15th Ave. No	Seattle
Paul E. Lange, 6813 Weeding Place	Seattle
Latona Floral Co., 347 E. 56th St	Seattle
Chas. H. Lilly Co	Seattle
Lindley Nurseries, 5517 Fifth Ave. N. W	Seattle
Isaac F. Madlem, 1525 Rainier Ave	Seattle
Chas. Malmo, 3100 Rainier Blvd	Seattle

C. E. McCoy, 4839 Brandon St..............................Seattle
S. K. Mochizuki, R. F. D. No. 6, Box 305..................Seattle
Carl Neuss, 507 85th Ave..................................Seattle
Philip D. O'Brien, 3118 Yesler Way........................Seattle
Oriental Gardens Co., R. F. D. No. 1, Box 92..............Seattle
Richmond Nurseries ....Richmond
Sandved Nursery, 1803 39th Ave. No. ....Seattle
Seattle Nursery Co., 4520 Sunnyside Ave...................Seattle
Stuber & Richardson, 4852 Holly St........................Seattle
University Floral Shop, 4309 14th Ave. N. E...............Seattle
University Nursery and Greenhouse, 4008 Ninth Ave. N. E....Seattle
Vashon Garden Co...Vashon
Chas. H. Waight, 2052 No. 78th St.........................Seattle
F. A, Whitney, 3846 34th Ave. W...........................Seattle
Thomas Wylie, 5138 Holly St...............................Seattle

KITTITAS COUNTY.

Fred I. Moffet, R. F. D. No. 1.........................Ellensburg

KLICKITAT COUNTY.

W. F. Walker, R. No. 2...................................Bickleton

PIERCE COUNTY.

A. A. Hinz, 618 South "K" St...............................Tacoma
McCormack Bros., Pacific Ave. and 15th St..................Tacoma
Mary J. Miller, 5223 South Sheridan........................Tacoma
O. M. Pudor ....Puyallup
Puyallup Nursery ....Puyallup
Rosecraft Fruit Farm.......................................Sumner
Frank F. Williams, 1402 South Ainsworth....................Tacoma

SNOHOMISH COUNTY.

City Floral & Seed Co.....................................Everett
Everett Floral Co., 1814 Hewitt Ave.......................Everett
Meadowdale Nursery ....Meadowdale
W. J. Richetts..Snohomish

SPOKANE COUNTY.

James Driscoll, 11 W. Main Ave............................Spokane
Glenrose Greenhouses ....Spokane
Hoyt Bros. Co., 11 Post St................................Spokane
Overman's Nursery, 29 Monroe St...........................Spokane
Reimer's Floral Art Shop, 807 Riverside...................Spokane
Spokane Seed Co., Inc.....................................Spokane
T. E. Westlake..Spokane

THURSTON COUNTY.

Capital City Nurseries and Greenhouse.....................Olympia

WALLA WALLA COUNTY.

Blossom Floral Co.....................................Walla Walla
Young & Lester..Walla Walla

WHATCOM COUNTY.

Floral Exchange, 102 West Holly St.....................Bellingham
H. B McCormick...Bellingham

YAKIMA COUNTY.

C. M. Appleget	Yakima
Hamilton Nursery Co., R. F. D. 4, Box 103	Yakima

OUT OF STATE.

Albany Nursery Co	Albany, Oregon
Clarke Bros., 287 Morrison St	Portland, Oregon
Henry A. Dreer, 714 Chestnut St	Philadelphia, Pa.
Milton Nursery Co	Milton, Oregon
Oregon Nursery Co., Inc	Orenco, Oregon
J. B. Pilkington, P. O. Box 242	Portland, Oregon
Portland Seed Co., Inc., Front and Yamhill Sts	Portland, Oregon
Russellville Nurseries, Inc., R. F. D. No. 1, Box 164	Portland, Oregon
Salem Nursery Co., Inc	Salem, Oregon
The Villa Nursery, R. F. D. No. 1, Box 395	Portland, Oregon

LIST OF NURSERYMEN LICENSED TO DO BUSINESS IN THE STATE OF WASHINGTON FOR THE YEAR 1920.

ADAMS COUNTY.

J. C. Kittel	Ritzville

ASOTIN COUNTY.

Lewiston-Clarkston Improvement Co	Clarkston

BENTON COUNTY.

J. R. Gardner	Richland
Prosser Nurseries	Prosser

CHELAN COUNTY.

Columbia & Okanogan Nursery Co., Inc	Wenatchee
Cashmere Nurseries, A. Loudenback, Prop	Cashmere

CLARKE COUNTY.

W. I. Cooper	Vancouver
Frank Luepke	Vancouver
Buchanan & Quarnberg	Vancouver
F. E. Payne	Camas

KING COUNTY.

N. Araki, 839 Elmgrove St	Seattle
Christian Bauer, 530 28th Ave. No	Seattle
C. H. Bear, 6420 Flora Ave	Seattle
E. F. Betz, P. O. Box 318	Renton
Capital Hill Floral Co., 1524 15th Ave. No	Seattle
H. O. Dutton, 3822 Ashworth Ave	Seattle
Fabi & Cole, 2569 Fourth West	Seattle
Fremont Floral Co., 4000 Evanston	Seattle
M. Furuya Co., Inc., 216 Second Ave	Seattle
H. M. Hanson, 6539 California Ave	Seattle
Hollywood Gardens, Inc., 1539 Second Ave	Seattle
F. Idaka, 452 27th Ave. No.	Seattle
Island Nurseries and Fruit Farm	Vashon
Peter Kempf, 3411 Belvedere Ave	Seattle
Lakeview Rose Gardens, 1601 15th Ave. No	Seattle
Paul E. Lang, 6813 Weeding Place	Seattle
Latona Floral Co., 347 E. 58th St	Seattle
Isaac F. Madlem, 1525 Rainier Ave	Seattle

Chas. Malmo, 3100 Rainier Blvd	Seattle
C. E. McCoy, 4839 Brandon St	Seattle
Frank Metzell, 3510 Holly St	Seattle
Thos. Morris, 1910 Ninth Ave. No	Seattle
Carl Nuess, 507 35th Ave	Seattle
Philip D. O'Brien, 3118 Yesler Way	Seattle
Oriental Gardens Co., R. F. D. No. 1, Box 92	Seattle
Randall & McLoughlin, 79 Madison St	Seattle
Sandved Nursery, 1803 39th Ave. No	Seattle
Mrs. Geo. Sheffield, R. F. D. No. 1	Burton
Chas. H. Waight, 2052 No. 78th St	Seattle
F. A. Whitney, 3846 34th Ave. West	Seattle
Woodruff-Boyce Seed Co., Inc., 89 W. Pike St	Seattle
Thomas Wylie, 5138 Holly St	Seattle
Art Floral Co., G. Noji, Prop	Seattle
Beall Greenhouse Co	Vashon
Crystal Springs Nurseries	Bothell
Lindley Nurseries, 5517 Fifth Ave. N. W	Seattle
Lillian M. McClimans, 5401 Ravenna Ave	Seattle
Paine Bros., R. F. D. No. 2, Box 285	Seattle

KITSAP COUNTY.

C. P. Dobson	Bremerton

KITTITAS COUNTY.

Fred I. Moffet, R. F. D. No. 1	Ellensburg

LEWIS COUNTY.

W. A. Leake	Centralia

PACIFIC COUNTY.

John A. Diem	Raymond

PIERCE COUNTY.

McCormack Bros., Pacific Ave. and 15th St	Tacoma
Mary J. Miller, 5223 South Sheridan	Tacoma
Puyallup Nursery	Puyallup
Rosecraft Fruit Farm	Sumner
Puyallup & Sumner Fruit Growers Canning Co	Puyallup

SNOHOMISH COUNTY.

Everett Floral Co., 1814 Hewitt Ave	Everett
Meadowdale Nursery	Meadowdale
W. J. Richetts	Snohomish

SPOKANE COUNTY.

Hoyt Bros. Co., 11 Post St	Spokane
Culbertson-Grote-Rankin Co	Spokane
A. A. Kelley, Station B	Spokane
H. E. Krause, R. F. D. No. 8	Spokane
P. Leavery & Sons, S. 2722 Fisk St	Spokane
A. McGregor, 15288 N. W. Boulevard	Spokane
W. J. McKay, Prop., Spokane Landscape Co., Box 1355	Spokane
Riverside Nursery, R. R. No. 6	Hillyard
T. E. Westlake, Westlake Public Market	Spokane

WALLA WALLA COUNTY.

Blossom Floral Co	Walla Walla
Young & Lester	Walla Walla

WHATCOM COUNTY.

Rockwell H. Thomas, 1208 Sixth St	South Bellingham
H. B. McCormick, 1121 High St	Bellingham

WHITMAN COUNTY.

Rosalia Nursery, L. S. Kimm, Prop	Rosalia

YAKIMA COUNTY.

C. M. Appleget	Yakima
Andrew Haxton, Inc., P. O. Box 162	Yakima
C. E. Bell	Grandview
B. Prince	Selah

OUT OF STATE.

Albany Nursery Co	Albany, Oregon
Luther Burbank	Santa Rosa, Cal.
Capital City Nursery Co	Salem, Oregon
Oregon Nursery Co., Inc	Orenco, Oregon
J. B. Pilkington, P. O. Box 242	Portland, Oregon
Portland Seed Co., Front and Yamhill Sts	Portland, Oregon
Salem Nursery Co., Inc	Salem, Oregon
The Villa Nursery, R. F. D. No. 1, Box 395	Portland, Oregon
California Nursery Co	Niles, Cal.
Clark Bros., 287 Morrison St.	Portland, Oregon
A. H. Heberle	Brighton, N. Y.
P. J. Hjort & Son	Thomasville, Ga.
R. M. Kellogg Co	Three Rivers, Mich.
Lewis Roesch	Fredonia, N. Y.
John L. Schuyleman, 5803 Woodstock Ave	Portland, Oregon
Stark Bros. Nurseries & Orchard Co	Louisiana, Mo.
H. S. Taylor & Co	Rochester, N. Y.

1918	Apples	Pears	Peaches	Plums and Prunes	Apricots	Cherries	Quinces	Nuts	Grapes	Raspberries	Blackberries	Strawberries	Miscellaneous Berries	Ornamental Trees, Shrubs & Vines	Garden Roots	Perennials and Miscellaneous
Adams	......	......	......	......	......	......	......	......	20	......	......	1,060	......	16	10	......
Benton	393	1,318	261	3,626	118	1,654	1	47	......	4	65	2,137	100	291	723	407
Chelan	6,790	15,287	126	4,655	15,239	12,700	......	34	1,056	......	......	8,475	752	457	......	......
Clallam	44	8	......	16	......	......	......	......	......	......	78	2,988	......	12	25	189
Clarke	93	16	20	642	......	27	......	25	1,232	64	100	3,438	28	272	126	808
Columbia	......	......	......	......	......	......	......	......	......	......	......	2,200	......	19	......	20
Cowlitz	36	24	15	28	6	63	......	......	14	......	96	2,704	400	57	312	972
Douglas	15	7	19	6	2	7	......	......	6	......	60	110	......	11	......	26
Ferry	......	......	......	......	......	......	......	......	......	......	......	1,935	......	......	......	......
Franklin	6	1	......	3	1	3	1	1	......	......	......	......	......	22	100	44
Garfield	73	15	1	11	1	2	......	......	5	36	......	......	2	42	12	64
Grant	35	4	8	5	7	12	1	......	20	5	5	220	3	5	......	44
Grays Harbor	170	61	12	117	4	79	......	8	28	371	217	4,998	259	709	243	590
Island	47	7	3	11	1	3	5	......	1	36	38	48	12	202	......	20
Jefferson	32	......	......	26	3	1	......	......	......	2	......	3,696	......	27	......	56
King	3,152	3,479	218	1,483	350	1,347	141	375	299	161	113	12,237	460	2,151	1,070	759
Kittitas	123	6	1	6	......	1	......	......	5	......	72	......	......	48	24	59
Kitsap	81	12	2	21	5	119	1	11	16	51	......	3,312	19	2,195	225	70
Klickitat	110	34	51	59	25	35	2	43	21	108	71	1,408	28	218	214	1,051
Lewis	296	51	105	88	5	227	10	43	126	5,902	161	39,543	2,096	760	101	2,293
Lincoln	189	6	16	15	9	48	1	......	4	8	8	2,900	......	34	......	25
Mason	23	2	......	1	4	......	......	2	25	......	......	1,425	33	5	375	652
Okanogan	347	6	34	1	7	6	......	1	26	12	......	10,400	38	45	125	5
Pacific	153	11	7	27	2	12	4	......	......	77	......	1,681	90	76	220	1,851
Pend Oreille	59	1	2	4	......	5	1	......	......	28	......	1,265	......	16	......	3
Pierce	1,011	284	365	502	15	918	29	19	2,844	774	639	22,769	439	2,742	301	1,193
San Juan	......	......	......	......	......	......	......	......	......	24	......	......	......	2	......	41
Skagit	288	342	......	334	......	493	......	......	53	188	128	9,291	94	491	263	481
Skamania	536	62	201	9	2	12	......	4	3	48	24	2,000	36	18	46	44
Snohomish	616	202	71	276	56	363	10	17	41	202	81	6,499	172	1,050	430	319
Spokane	821	93	113	332	162	146	16	1	24	......	4	28,297	500	1,293	666	120
Stevens	28	1	19	16	2	22	2	1	9	12	......	2,800	......	5	228	28
Thurston	340	550	43	180	10	189	21	24	282	466	253	2,529	91	284	338	932
Wahkiakum	14	5	......	9	......	4	2	2	3	......	......	166	......	42	200	931
Walla Walla	18	3	46	9	5	17	......	5	23	72	132	2,868	120	317	332	159
Whatcom	177	52	16	153	8	128	4	18	15	66	......	5,959	80	436	543	511
Whitman	70	199	2,600	729	1,188	232	......	4	2	68	81	3,240	9	38	......	1,094
Yakima	1,789	57,200	3,569	36,992	2,068	48,063	89	436	2,148	358	521	18,418	2,351	4,506	623	1,404
Asotin	1	......	......	......	......	5	......	......	6	......	......	395	......	17	......	9
Totals	18,329	70,306	7,982	50,343	19,295	67,864	361	1,130	8,365	9,175	2,051	223,895	8,206	18,924	7,927	17,290

1919	Apples	Pears	Peaches	Plums and Prunes	Apri-cots	Cher-ries	Quinces	Nuts	Grapes	Rasp-berries	Black-berries	Straw-berries	Miscel-laneous Berries	Miscel-laneous Roots	Orna-mental Trees, Shrubs & Vines	Garden Roots	Peren-nials and Miscel-laneous
Adams	405	10	10	10	....	10	....	....	....	60	60	....	1	....	6	1	1
Benton	5,371	3,592	2,489	9,835	....	654	20	93	12,003	168	146	14,050	127	132	801	100	93
Chelan	4,764	6,753	57	1,936	45	2,871	22	321	48	1,841	156	15,455	2,230	50	2,949	....	1
Clallam	64	....	7	10	....	15	....	....	....	204	204	19,958	....	120	60	....	81
Clarke	86	52	68	5,326	1	52	1	48	47	205	36	42,645	150	340	1,285	100	76
Columbia	410	....	....	....	....	....	....	....	....	....	....	7,700	....	120	2	....	12
Cowlitz	69	39	47	30	5	76	5	4	6	215	149	4,340	227	448	80	....	139
Douglas	30	....	....	....	....	5	....	....	100	....	....	100	....	....	....	....	....
Ferry	5	....	....	2	1	2	....	....	8	....	....	1,450	....	....	3	12	13
Franklin	....	7	3	....	....	2	....	....	....	....	....	100	5	26	14	....	77
Garfield	19	7	....	7	1	2	....	....	....	48	48	425	....	....	3	....	50
Grant	9	....	1	2	1	3	....	....	8	26	24	200	1	....	5	....	....
Grays Harbor	166	78	8	116	....	68	3	....	....	464	194	16,784	337	267	800	....	589
Island	7	8	....	....	....	8	....	....	....	....	....	3,450	....	50	20	....	16
Jefferson	60	51	....	....	....	6	....	1	....	....	....	14,975	....	884	301	....	18
King	10,065	4,223	2,415	3,909	7	8,992	65	557	67	318	148	98,705	10,509	808	17,096	....	636
Kittitas	264	10	20	....	4	6	....	2	11	75	99	4,700	5	36	531	....	89
Kitsap	91	32	7	25	2	60	1	18	17	60	....	15,130	1	....	315	12	194
Klickitat	400	16	12	6	11	34	1	284	67	264	62	1,394	84	416	155	....	356
Lewis	248	110	3	144	10	135	7	47	26	185	126	19,818	863	562	520	....	593
Lincoln	188	59	43	3	6	14	....	....	36	371	310	8,309	45	....	30	....	2
Mason	10	....	....	3	....	2	....	....	....	36	36	573	51	....	47	....	128
Okanogan	507	18	55	22	23	155	2	38	4	64	56	9,600	66	....	232	....	4
Pacific	93	53	35	50	....	....	2	....	2	180	63	4,642	1,406	1,799	174	....	328
Pend Oreille	33	4	4	11	1	18	....	1	....	94	84	4,550	5	....	16	....	....
Pierce	262	109	186	745	2	5,453	3	26	24	426	39	83,747	5,070	482	3,942	20	1,247
San Juan	....	1	....	1	....	....	....	1	....	....	....	1,605	....	....	9	....	50
Skagit	56	15	2	130	1	661	3	5	13	560	892	8,641	517	346	845	....	798
Skamania	479	85	6	5	1	37	....	2	10	200	50	925	525	....	72	....	147
Snohomish	226	33	15	56	2	27	3	....	20	756	312	39,825	1,140	471	643	....	137
Spokane	1,319	471	216	1,102	22	418	3	68	205	767	551	100,630	965	10,806	2	....	452
Stevens	120	12	19	9	5	19	....	13	10	96	96	8,650	2	....	13	....	7
Thurston	171	42	44	89	5	115	2	13	47	179	118	23,408	3,030	476	252	....	617
Wahkiakum	29	10	8	42	....	63	....	....	....	198	62	1,395	....	198	50	....	157
Walla Walla	48	15	40	232	4	12	....	....	....	24	216	9,550	56	40	405	....	411
Whatcom	173	366	17	579	3	351	10	34	43	428	1,336	26,874	1,025	96	1,795	....	628
Whitman	55	2	19	18	1	30	....	6	13	221	221	4,350	30	50	344	....	12
Yakima	11,136	11,606	751	20,551	31	49,788	3	1,193	347	1,456	346	61,530	4,525	175	12,879	....	231
Asotin	77	1	33	8	13	14	....	1	911	24	44	625	48	....	165	....	2
Totals	38,551	27,890	6,140	45,014	207	70,173	156	2,776	14,087	10,213	6,279	675,762	33,045	18,698	46,251	244	8,399

Greenhouses.

The growing of flowers and by some vegetable growing under glass is in some parts of the state an important industry. Climatic conditions and prices of fuel remove many of the costly operations connected with the business in colder sections. Many florists carry a nursery of ornamental trees, shrubs, and potted plants in connection with the floral business. Probably no section of the United States is adapted to so large a list of trees and plants as the territory tributary to Puget Sound. Gardens and yards are to be found containing ornamentals from nearly every European country besides those indigenous to the territory.

Rhubarb, asparagus, and mushrooms are grown very successfully in bank cellars without artificial heat, in some parts of the state, to the extent that vast quantities are shipped to outside markets.

The shipping of head lettuce to Eastern markets is rapidly increasing, and is now a prominent industry in Pierce and King counties.

The following table gives an idea of the magnitude of the business:

GREENHOUSE REPORT, 1919-1920.

District	YEAR	No. of Greenhouses	Assessed Valuation	Square Feet of Glass	Volume of Business
1	1919	8	$68,185 00	220,350	$72,845 68
1	1920	9	70,635 00	221,130	101,900 00
2	1919	19	71,914 00	299,200	134,960 00
2	1920	15	65,216 00	282,570	142,805 00
3	1919	3	1,350 00	2,865	1,600 00
3	1920	3	1,850 00	2,865	1,800 00
4	1919	....	5,050 00	30,000	27,784 20
4	1920	....	5,050 00	30,000	45,047 00
5	1919	5	27,380 00	96,000	24,600 00
5	1920	5	11,810 00	82,000	24,000 00
6	1919	3	2,350 00	13,840	6,200 00
6	1920	3	5,700 00	14,960	6,000 00
7	1919	12	22,100 00	122,300	39,400 00
7	1920	12	22,200 00	122,300	37,950 00
8	1919	....	....	....	....
8	1920	15	20,000 00	268,500	187,000 00
9	1919	....	....	....	....
9	1920	15	26,250 00	207,340	90,674 25
10	1919	....	....	....	....
10	1920	4	10,470 00	31,500	25,000 00
	Totals—1919	51	$198,329 00	784,555	$307,389 68
	Totals—1920	82	$239,181 00	1,263,165	$612,176 25

RECAPITULATION—AMOUNTS OF SPRAY MATERIALS USED.

District	YEAR	LIME SULPHUR		ARSENATE OF LEAD		OIL		Black Leaf 40 (Nicotine Sulphate), Lbs.
		Dry, Lbs.	Solution, Bbls.	Dry, Lbs.	Paste, Lbs.	Dormant, Bbls.	Distillate Emulsion, Bbls.	
1	1919	200	2,900	89,000			† 5	
1	1920	200	2,920	89,000				
2	1919	81,800		76,850	* 6,000			
2	1920	91,495		306,115	5,415	800	‡ 872	3,825
3	1919	17,000	1,655	180,000				2,500
3	1920	14,955	1,800	196,000				2,700
4	1919	110,000	5,500	751,708	171,187	60	15	3,400
4	1920	145,000	8,708	765,000	120,000	40	98	4,000
5	1919	109,972	7,940	395,620	357,750	170	64	19,500
5	1920	265,700	9,925	794,476	121,975		55	10,094
6	1919	20,000	2,147	16,000	80,000			
6	1920	36,000	1,874	46,000	46,000			
7	1919	50	25					
7	1920	50	25					
8	1919	100	50					
8	1920	100	50					
9	1919	100						
9	1920	100						
10	1919	150	48					
10	1920	150	114					
	Totals—1919	339,372	20,285	1,509,178	608,887	230	79	25,400
	Totals—1920	550,795	25,416	2,195,591	287,995	840	158	20,691

* Paris Green.
† Gallons.
‡ Lime.

District	YEAR	Number of Spray Machines in Use	Calcium Arsenate	Magnesium Arsenate	Sulphur for Spray Machines, Lbs.	Lime	Blue Stone	Soluble Lime Sulphur
1	1919	86	50	150				
1	1920	100						
2	1919	180						
2	1920	293			218,800			
3	1919	120			40,000			
3	1920	150			30,000			
4	1919	* 500						
4	1920	* 400						
5	1919	225						
5	1920	344						
6	1919	344				8,000	6,000	5,000
6	1920	347				10,250	8,450	4,000
7	1919							
7	1920							
8	1919							
8	1920							
9	1919							
9	1920							
10	1919							
10	1920	6						
	Totals—1919	955	50	150	40,000	8,000	6,000	5,000
	Totals—1920	2,140			248,800	10,250	8,450	4,000

* New.

District	YEAR	Atomic Sulphur, Lbs.	Sulphur, Lbs.	Lime, Lbs.	Copperas, Lbs.	WHALE OIL SOAP	
						Liquid, Gals.	Soap, Lbs.
5	1919.................	23,690	655,000	328,000	6,000	525	5,000
5	1920.................	50,400	332,000	200,000	....	250	600

District	YEAR	Calcium Arsenate, Lbs.	Calcium Arsenite, Lbs.	Nitrate of Soda (Fertilizer), Lbs.	B. T. S., Lbs.
5	1919..	....	....	40,000	....
5	1920..	10,000	5,000	....	8,000

RECAPITULATION—IMPORTS OF FRUITS AND VEGETABLES (In Carloads).

District	YEAR	Apples	Peaches	Pears	Oranges	Bananas	Lemons	Grapes	Plums & Prunes	Apricots	Cherries	Water-melons	Canta-loupes	Toma-toes
1	1919............	....	....	....	10	20	5	½	....	....	....	....	....	....
1	1920............	....	....	....	10	20	5	½	....	....	....	....	....	....
2	1919............	18	....	....	36	178	29	8	....	1	....	30	18	3
2	1920............	20	8	3	43	181	37	10	2	2	....	39	23	8
3	1919............	....	....	....	10	8	3	2	2	....	1	....	½	½
3	1920............	....	....	....	10	9	4	....	....	....	....	....	....	....
4	1919............	....	....	....	3½	7	10	....	....	....	....	2	¼	2
4	1920............	....	....	....	4	5	2½	½	....	....	....	2	1½	2
* 5	1919............	....	....	....	....	....	....	....	....	....	....	....	....	....
* 5	1920............	....	....	....	....	....	....	....	....	....	....	....	....	....
6	1919............	1	1	½	8	6	3	....	....	....	....	....	7	½
6	1920............	½	1	¼	6	4	2	2	¼	1	¼	6	7	1
7	1919............	....	15	....	36	62	22	19	2	2	3	10	16	7
7	1920............	74	15	3	38	41	19	18	3	2	3	13	21	4
8	1919............	....	....	....	....	....	....	....	....	....	....	....	....	....
8	1920............	4	6	2	168	194	22	35	2	1	2	96	63	2
9	1919............	24	33	....	403	298	99	187	3	....	....	111	175	66
9	1920............	13	74	40	354	200	108	261	....	....	....	199	239	56
†10	1919............	....	....	....	....	....	....	....	....	....	....	....	....	....
†10	1920............	....	....	....	....	....	....	....	....	....	....	....	....	....
	Totals—1919..	43	49	½	506½	569	171	216½	7	3	4	153	216¾	79
	Totals—1920..	111½	104	48¼	633	654	199½	327	7¼	6	5¼	355	354½	73

* No data available.
† No report.

IMPORTS OF FRUITS AND VEGETABLES—Continued.

(In Carloads.)

District	YEAR	Strawberries	Other Berries	Other Fruit	Potatoes	Onions	Egg-plant	Cabbage	Cucumbers	Celery	Rhubarb	Carrots	Green Corn	Other Vegetables	Totals
1	1919			½	59									16	111
1	1920			½	59									16	111
2	1919			18	36	17		7		5				157	556
2	1920	8		17	29	23		9						170	682
3	1919	3	1		10	1¼		5	1	½				1¼	50
3	1920				9			5		½					37½
4	1919	1			¼	2		3	¼	¼	½	¼		20½	52¾
4	1920	4	1	1½	25	60		13		4	½	1		3	130½
* 5	1919														
* 5	1920														
6	1919	½	½	1	4	2		10					½	6	51½
6	1920	4	¼	1	8	30	¼	7	¼				¼	½	77¾
7	1919	8		20	29	25		3						1	275
7	1920	2			114	24		7						1	402
8	1919														
8	1920	13	56	37							3			3	709
9	1919	23	10	114	224	142		138		26				446	2,542
9	1920	15		127	256	168		112		16				542	2,775
†10	1919														
†10	1920														
	Totals—1919	35½	11½	153½	382¼	189¼		166	1¼	31¾	½	¼	½	647¾	3,638¼
	Totals—1920	46	57¼	184	495	300	¼	153	¼	20½	3½	1	¼	735½	4,874¾

* No data available.
† No report.

STATE FAIR.

The Washington State Fair is one of the functions of this department. It is a state-wide institution. Each and every citizen of Washington has his or her proportion in its ownership, and hence is duly interested in its success. The people of Washington are greatly interested in their educational institutions, and should be forever. Consequently for any citizens of Washington to not take any interest in the welfare of the State Fair is for them to overlook one of Washington's important educational factors. And whether the State Fair is regarded from the viewpoint of an educational institution, a great and wonderful advertising medium for Washington, or a general meeting place for residents from all parts of the great commonwealth, the sum total is, that in its several ways and in its aggregate, we believe it is of enormous value to the state and to its people as one of the marks in agricultural development.

On the part of the Department of Agriculture it requires very energetic effort, close attention to details, much ingenuity, careful study and the keeping in touch with every section of the state to enable the planning and successful carrying through of a State Fair of the magnitude and importance of this one. It is because all those factors in its success as mentioned have been conscientiously observed by the Agricultural Department that it awaits inspection and approval each year, by the thousands who attend it. The Washington State Fair is not a transient proposition, it is a permanent part of the state itself, a great and worthy educational and entertaining phase of Washington's development, epitomizing most fascinatingly the state's progress, prosperity and hopes for the future.

All divisions of the department lend their best efforts each year to the success of this enterprise. The Horticultural Division has its inspectors in the various districts and counties in the state, who encourage and in all proper ways stimulate the collaborating and installation of county or district exhibits, showing the agricultural and horticultural products of that section. Each year when supported by the people of the different communities and assisted by being furnished material for exhibits, the district inspectors collect, install and have county exhibits from their districts in charge. In some instances they have more than one county display under their care. They always assist when possible in the work of holding successful county fairs in the various counties of their districts. They frequently are asked to act as judges in the awarding of premiums at the different county fairs, as is also the Chief of the Division, sometimes going to other state fairs to render such services.

Respectfully submitted,

M. L. DEAN,
Chief, Division of Horticulture.

SEED DIVISION.

Honorable F. H. Gloyd, Commissioner of Agriculture, Olympia, Washington.

Dear Sir: For this biennium the Seed Division has been operating under the old seed law from July 1, 1918, to April 1, 1919, when important changes made in the law by the 1919 legislature took effect. From April 1, 1919, to June 30, 1920, the Division has worked under the new law and also the seed certification law passed by the same legislature.

THE SEED LAW.

Important provisions of the new law follow with an explanation of the same and recommendations for further changes when it is felt necessary for the efficiency of the service provided for the public.

LABELING.

The new law requires that all agricultural seed of one pound or more be labeled with the actual percentage of purity and germination. Formerly certain standards were fixed and seed complying with such standards was simply labeled "Standard." Under the new regulation seed is sold absolutely on its merits, seed testing higher than the former standards being labeled with its actual test. This also does away with the practice of mixing the highest grade of seed and bringing it down to the lowest limit of "Standard" stock.

A minimum germination for all seeds, except flower seeds and medicinal herbs, is fixed at 60 per cent. Seeds germinating less than this are not allowed to be sold.

Section five, paragraph C, should be more specific. This clause requires only that the general locality in which the seed is grown be stated on the label, "if known." The two words "if known" practically nullify this clause. If a seedsman has seed from some locality which does not grow as high grade seed as some other locality all he has to do to avoid placing on the tag the locality grown, is to "not know" where it is grown. This results in unacclimated seed sold in many cases as acclimated stock.

This clause should require the placing upon the label of all agricultural seeds, the locality grown, if grown in this state, the county, if grown in some other state, the state and if imported, so stated. The locality where the seed is grown is known by the handlers of the stock and if not can easily be traced. Such a clause would therefore work no hardship upon the seedsman, only giving to the purchaser protection due him.

Noxious Weeds.

To the list of weeds outlawed as noxious by the old law, fanweed (Thlaspi arvense), Russian thistle (Salsola pestifer), Jim Hill mustard (Sysmbrium altissimum), plantain buckhorn (Plantago lanceolata), and bindweed (Convolvulus sepium), were added. All of these weeds are very difficult to eradicate after once becoming established in the soil. For this reason, all the protection possible should be given the farmer against having his fields infested with such weeds, which will lower the yield of his crop and cost a great deal to eradicate.

Mixtures.

One big advance in the new law over the old law is the labeling of mixtures of two or more species of grasses or of clovers, or both. It is required that all mixtures be labeled as such, with names of each species of grasses or clovers that are present in quantities of four per cent or more, the percentage by weight of "foreign seeds," and inert matter. Formerly, a great deal of cheap seed was disposed of in mixtures. The labeling of the contents of a mixture will give the purchaser the protection of knowing exactly what he buys. For further protection the percentages of each kind of seed in the mixture should be required to be placed on the label as well.

Laboratory.

The laboratory was transferred from the Department of Agriculture and placed under the State Experiment Station, and all samples analyzed free of charge, by the new law. It was felt by the Commissioner of Agriculture that the analysis of samples could be handled much the same as the State Chemists handle samples of food, drugs, etc. for the Fourth Division. The experience of the past year has proven this arrangement to have been somewhat disappointing. In some cases it has crippled the work of the department, as well as lessened the efficiency of the inspection service.

Over two-thirds of the seed business of the state is handled on the west side of the mountains. A laboratory should be located at Olympia or at the Experiment Station on the west side of the mountains. It is earnestly hoped, therefore, that the next legislature will remedy this situation, so that the seed growers and dealers may be properly served.

INSPECTION WORK.

The work of inspection has been greatly facilitated the last biennium by the special appropriation made available by the last legislature. With this appropriation at hand, it was possible to get over the greater part of the state twice a year, to check up the seed stocks.

In the Spring, the seed stocks held by country dealers turn rapidly and should receive at least two inspections. With two inspections in the Spring and one in the Fall, a fair check could be kept upon seeds as sold over the counter. It is recommended that the department be equipped to handle the work upon such a basis.

The main problem in inspection is the watching of shipments into the state from outside seed dealers. The large seed dealers of this state are in sympathy with the law and endeavor to co-operate with the department to the best of their ability. Many outside shipments coming into the state are sent direct to the farmer by mail, express or freight, in this way escaping any chance of being caught by an inspector. Many tons of seed have been condemned during the last biennium, the greater part of which has been stock that has been shipped in by outside dealers. How much stock is shipped direct to the farmer and never inspected, it is difficult to estimate, but it is large, judging from the number of complaints that are received from farmers who have patronized such dealers. At present, we have on file a complaint, in which the farmer had bought several hundred pounds of pasture mixture, an analysis of which showed over seventeen percent of weed seed, which contained 2 to 3 per cent of buckhorn plantain.

In order to protect the farmer and honest seedsman by controlling more effectively the movement of seeds into this state, it is earnestly recommended that the state require all seed dealers doing business in the state to be licensed and a bond furnished, and the department to be notified of all shipments of stock into this state. The Horticultural Division has found this system to be very effective in the control of the sale of nursery stock within the state, and it should be of very great aid in the regulation of the seed trade. Several states have adopted the license system, notable among which are North Carolina, South Carolina and Ohio. These states find it of great assistance in the effective enforcement of the law, as well as a means for aiding in the matter of providing finances for the enforcement thereof.

Percentage of Purity and Viability of Samples Analyzed by the Laboratory.

The following tables have been prepared with the object in view of giving a comprehensive synopsis of the analysis of the different samples handled by the laboratory.

The results found in these tables are fairly indicative of the kind of seed planted by the farmer and sold in the state. The laboratory being transferred to Pullman during the middle of the biennium, the samples handled at that place during the last half are included so as to complete the records for the entire biennium.

The average percentage of purity of the small seeded legumes has held up well during the biennium, as seen in Table No. 1, despite the tremendously high prices of these seeds, the last year, 1919-1920. It will be noted that big gains were made in the average of two and only slight declines in that of two other seeds. The averages also compare fairly favorably with the United States standards for the different legume seeds. This showing is quite remarkable when the conditions of the seed industry for the last year or so are taken into consideration. Field seeds advanced to sky-high prices and first-class stock was difficult to obtain. The care and vigilance of the seedsman of this state in keeping on such a high plane the quality of the seeds offered to the public during such difficult times is to be commended.

The grains and grasses have not held up quite so well, as shown in Table No. 2, although in no case is there an alarming decrease in the percentage of purity. Pasture mixtures are the lowest under the United States standard, being almost eleven per cent lower. The rest of the grains and grasses average fairly well, only a few being noticeably under the United States standards of purity, namely, Kentucky bluegrass, meadow fescue and rye.

Tables 3 and 4 show the average percentage of germination of both field and vegetable seeds. Kentucky bluegrass and rye grass are quite low in their germination, bluegrass averaging as low as 30 per cent in 1919, and 59.0 in 1920. Both years it has fallen below the present requirements of the law. Several other field seeds are quite low as compared to the United States standards, but in no case average less than 60 per cent, the minimum by law. The averages of the vegetable seeds are, in most cases, lower than the United States standards, but in only one instance, that of spinach, in 1919, average 41.0, does it fall below the minimum. It is interesting to note the lowest per cent of a few of the vegetables. Some go as low as zero, 4, 10 and 15 per cent. The entire crop would be lost by planting seeds of such low viability, and shows conclusively why all seed should be tested and that test placed on the stock before being sold.

Table 5 is interesting in that it indicates the percentage of samples of the principal legumes and grasses containing noxious weeds. It can be seen that the dodders, buckhorn plantain and Russian thistle are the principal noxious weeds we have to deal with. Buckhorn plantain is the worst offender in this regard. Every effort should be made to lessen the presence of this weed in the seed sown in this state. It is getting a strangle hold on the Oregon clover seed industry, so much so that Oregon clover does not command the premium it formerly did in Eastern markets. To aid the seed industry in this state, it should be kept down. At the bottom of the table is given the percentage of green foxtail in the samples. It can be seen that it is nearly as bad as buckhorn. It is very prevalent in the irrigated regions of the state, especially the Yakima valley, where the bulk of the red clover seed of the state is raised, and places a big handicap on this industry, inasmuch as buyers discriminate against stock containing this weed. It should be placed in the noxious weed seed class.

TABLE NO 1—AVERAGE PERCENTAGE OF PURITY OF CLOVERS AND ALFALFA.

KIND OF SEED	U. S. Standard	1918-1919					1919-1920				
		Number of Samples	Lowest	Highest	Av. Percentage of Purity	Number Above Standard	Number of Samples	Lowest	Highest	Av. Percentage of Purity	Number Above Standard
Alfalfa	98	17	98.88	99.96	99.12	13	140	70.05	99.94	97.75	89
Alsike Clover	95	11	55.40	99.15	92.52	7	34	82.70	99.55	96.54	28
Red Clover	98	44	51.08	99.42	91.86	14	104	42.16	99.86	95.09	39
White Clover	95.	11	81.35	98.70	95.10	8	33	83.50	99.05	94.24	15
Sweet Clover	98	....	....	....	....	....	34	42.91	99.99	95.59	10
Totals	....	83	....	....	....	42	345	....	....	....	181

TABLE NO. 2—AVERAGE PERCENTAGE OF PURITY OF GRAINS AND GRASSES.

KIND OF SEED	U. S. Standard	1918-1919					1919-1920				
		Number of Samples	Lowest	Highest	Av. Percentage of Purity	Number Above Standard	Number of Samples	Lowest	Highest	Av. Percentage of Purity	Number Above Standard
Kentucky Bluegrass	90	....	....	....	....	....	34	10.98	96.56	83.41	12
Barley	99	2	90.30	97.18	93.74	....	11	92.29	99.60	95.85	....
Corn	99	....	....	....	....	....	8	99.94	100.00	99.95	8
Oats	99	2	98.34	98.64	98.49	....	18	92.13	99.96	97.41	7
Rye	99	....	....	....	....	....	4	81.84	98.97	93.30	....
Wheat	99	2	98.13	98.90	98.52	....	32	92.44	99.78	97.42	8
Vetch	98	....	....	....	....	....	6	89.42	99.86	97.23	4
Peas	99	....	....	....	....	....	22	97.88	100.00	99.48	17
Meadow Fescue	95	1	92.62	92.62	92.62	....	8	78.51	98.88	87.89	1
Millet	98	....	....	....	....	....	11	96.52	99.96	98.58	6
Orchard Grass	85	4	75.45	77.35	76.40	....	15	72.55	96.65	81.84	13
Redtop	90	....	....	....	....	....	12	50.00	97.90	90.37	9
Rye Grass	95	9	80.45	95.41	90.87	1	15	86.06	99.81	96.49	11
Timothy	98	16	93.50	99.64	97.87	10	32	76.20	99.85	98.15	27
Sudan Grass	98	....	....	....	....	....	6	95.52	98.63	97.01	1
Pasture Mixture	95	2	79.80	87.15	84.87	....	11	72.85	98.10	84.87	3
Totals	....	38	....	....	....	11	245	....	....	....	127

TABLE NO. 3—GERMINATION TESTS OF FIELD SEEDS, 1918–1920.

KIND OF SEED	U. S. Standard	1918-1919					1919-1920				
		Number of Tests	Lowest	Highest	Number Above Standard	Average Test	Number of Tests	Lowest	Highest	Number Above Standard	Average Test
Alfalfa	85-90	24	38.0	98.0	8	75.9	119	21.0	99.4	8	75.9
Barley	90-05	1	94.0	94.0	....	94.0	11	45.0	99.0	5	87.5
Bluegrass	45-50	6	15.0	47.5	....	29.8	29	12.0	92.0	21	59.0
Clover, Alsike	75-80	19	61.5	93.3	11	80.8	33	60.5	94.0	22	81.9
Clover, Red	75-80	53	47.5	97.3	35	83.1	82	46.0	96.0	43	78.5
Clover, White	75-80	17	36.6	85.5	5	68.0	22	31.0	89.0	5	68.2
Clover, Sweet	75-80	7	58.0	87.5	4	76.3	21	26.0	97.0	8	70.0
Corn, Field	90-95	10	74.0	100.0	6	93.9	12	0.0	100.0	2	80.0
Corn, Sweet	85-90	1	97.0	97.0	1	97.0	13	15.0	99.0	6	82.6
Millet	85-90	7	66.5	90.0	3	85.5	7	75.5	96.0	4	87.3
Orchard Grass	70-75	4	48.0	68.5	....	87.3	15	58.0	95.0	10	81.1
Oats	90-95	4	93.5	100.0	3	96.9	19	42.5	98.5	7	86.5
Meadow Fescue	85-90	7	65.0	97.5	3	82.0	8	50.5	92.5	3	76.8
Peas	90-95	12	73.0	100.0	4	90.3	83	62.0	100.0	21	93.1
Redtop	70-75	....	....	....	....	....	11	52.0	95.0	7	80.0
Rye Grass	80-85	6	42.0	91.0	1	63.1	26	6.0	95.5	7	61.2
Rye	90-95	3	32.0	96.5	2	74.5	4	89.0	96.0	1	92.0
Sudan Grass	75-80	....	....	....	....	....	4	72.5	85.0	3	81.0
Timothy	85-90	21	84.5	99.5	16	92.9	32	74.5	99.5	24	92.0
Vetch	70-75	....	....	....	....	....	9	49.0	100.0	7	82.5
Wheat	90-45	3	98.5	99.0	3	98.7	38	74.5	100.0	29	93.4
Pasture Mixture	....	....	....	....	....	....	18	49.0	91.2	....	71.0
Totals	....	205	....	....	105	....	566	....	....	243	....

TABLE NO. 4—GERMINATION TESTS OF VEGETABLE SEEDS, 1918-1920.

KIND OF SEED	U. S. Standard	1918-1919					1919-1920				
		Number of Tests	Lowest	Highest	Number Above Standard	Average Test	Number of Tests	Lowest	Highest	Number Above Standard	Average Test
Beans	90-95	5	94.0	100.0	4	97.3	15	11.2	96.5	8	71.7
Brussels Sprouts	....	....	....	....	....	....	8	80.5	99.0	....	96.8
Beets	75-80	8	70.6	88.0	2	76.0	57	21.5	91.5	18	63.2
Cabbage	90-95	1	77.0	77.0	....	77.0	164	12.0	99.5	37	83.7
Carrot	80-85	5	58.5	85.5	1	74.3	33	46.0	88.5	5	68.5
Cucumber	80-90	....	....	....	....	....	6	65.5	94.0	2	85.1
Kale	90-95	....	....	....	....	....	9	80.0	99.0	3	91.5
Lettuce	85-90	....	....	....	....	....	7	....	100.0	4	65.0
Mangel	80-85	1	82.0	82.0	....	82.0	24	44.0	98.0	10	78.8
Onion	80-85	4	....	96.0	2	67.9	67	12.0	100.0	21	75.1
Radish	90-95	....	....	....	....	....	85	29.0	100.0	8	79.5
Rape	90-95	1	95.0	95.0	....	95.0	6	48.0	99.5	2	75.0
Rutabaga	90-95	1	78.0	78.0	....	78.0	44	9.5	100.0	18	79.2
Spinach	80-85	4	16.0	54.0	....	41.0	29	47.5	90.0	9	78.9
Sunflower	75-80	....	....	....	....	....	9	10.5	100.0	4	66.8
Turnip	90-95	5	94.0	99.0	3	97.2	57	4.0	99.5	19	81.8
Totals	....	35	....	....	12	56.5	....	....	....	158	....

TABLE NO. 5—PERCENTAGE OF SAMPLES CONTAINING NOXIOUS WEED SEEDS.

NAME OF WEED	ALFALFA		ALSIKE		RED CLOVER		WHITE CLOVER		TIMOTHY		ORCHARD GRASS		GRASS MIXTURE		CEREALS	
	1918 1919	1919 1920	1918 1919	1919 1920	1918 1919	1919 1920	1918 1919	1919 1920	1918 1919	1919 1920	1918 1919	1919 1920	1918 1919	1919 1920	1918 1919	1919 1920
Bindweed		1.6													16.6	9.6
Clover and Alfalfa Dodder	17.6	3.2			2.3	2.2										
Canada Thistle				3.0			3.8									
Corn Cockle																3.2
Field Dodder	17.6	4.0		3.0	2.3	3.3	9.1	7.7								
Charlock		3.2														
Fanweed																
Quackgrass		1.6														
Plantain Buckhorn	6.0	25.4	63.6	27.2	47.9	34.1	27.2	42.3	7.7	6.2	25.0	26.6	100.0	54.5		
Russian Thistle	30.0	28.2			53.5	27.4	9.1		7.7					9.1		
Jim Hill Mustard			9.1	6.1		4.3		15.3		6.2				36.3		1.6
Wild Oats*															66.6	60.6
Green Foxtail	17.6	49.2	9.1	6.1	70.0	56.0	18.2	3.9					50.0			1.6

* Not a noxious weed by law.

SEED CERTIFICATION.

The Law.

The Law, as passed by the 1919 Legislature, provides for the following:

(1) Inspection, grading, and certification of growing crops of agricultural and vegetable seed.

(2) The Commissioner of Agriculture to promulgate and enforce rules and regulations in regard to same.

(3) Inspection at the request of the grower.

(4) Fees fixed and collected for such service.

This law was passed owing to the demand of seed growers throughout the state, for inspection of their crops grown for seed, and the issuance of a state certificate upon the same, stating the trueness to variety, name, freedom from disease, or percentage of germination and purity.

THE SEED INDUSTRY OF WASHINGTON.

Washington is one of the leading states in the production of vegetable seeds. In 1918, it led all states, with an acreage of over 42,000, or one-sixth of the nation's production, and was third in the years 1919 and 1920.

In the Skagit valley is produced over 70 per cent of the cabbage seed in the United States. The seed produced here is of the finest quality, superior to any grown in this country and the equal to any grown in Europe. The Skagit valley, with the White River valley and Chehalis valley, produces most of the beet, kale, onion, spinach, and turnip seed raised in the state. Several thousand acres of garden pea seed are raised each year in the Skagit valley, Island and San Juan counties, but the bulk of this crop is produced in the eastern part of the state, in the Palouse country, where peas make an excellent summer fallow crop. Pea seed of very high quality is raised in both sections.

The accompanying table shows the importance of the vegetable crops of this state in relation to national production. With most crops, it is very high, being almost the entire national production for turnips and cabbage. Some seed crops not grown in this state do not appear in the table.

PRODUCTION OF VEGETABLE SEED IN WASHINGTON.

PLANT	1920		1919		1918	
	Acres	% Total Nat. Pro.	Acres	% Total Nat. Pro.	Acres	% Total Nat. Pro.
Beet, Garden	212	52.8	224	9.0	121	5.0
Beet, Mangel	60	55.2	92	15.0	101	24.1
Cabbage	745	70.0	1,524	72.5	514	52.8
Kale	34	55.7	32	30.2	22	31.0
Onion	85	5.0	30	....	30	....
Peas, Garden	25,783	23.1	27,155	26.0	38,467	37.3
Radish	100	3.0	215	2.0	709	8.5
Spinach	70	54.2	169	15.0	1,767	45.0
Squash, Winter	49	2.0	432	15.0	452	17.8
Turnip, English	307	90.5	757	61.0	353	46.0
Turnip, Swede	126	96.0	168	77.0	227	84.0
Totals	27,580	13.1	30,798	12.8	42,708	16.3

CERTIFICATION RULES AND REGULATIONS.

Rules and regulations have been drawn up and adopted for alfalfa, clovers, vetches, peas and small grains and potatoes.

Potato Rules and Regulations.

Rules and regulations for potato seed certification are the same as those adopted by the eight western states, California, Oregon, Arizona, Utah, Idaho, Montana, Nevada and Washington, at a meeting at Riverside, California, May, 1919.

For seed potatoes, three inspections are made. One at blooming time, the second just prior to maturity of plant, and the final inspection after harvest and after the potatoes have received their grading for the seed market. If the potatoes have passed the final inspection, a certificate is issued to the grower covering his stock.

This certificate is evidence of varietal purity and freedom from disease.

Every bag sold containing certified seed has attached to it a tag, which is fastened and sealed to the bag by an inspector. This tag identifies the contents of the bag.

Standards for Alfalfa and Clovers.

Three grades, consisting of pedigreed seed, improved seed, and bulk seed, have been adopted for alfalfa and clovers. Pedigreed seed must be of only one variety or strain, and must be of high quality and purity and free from seed of all weeds. Improved seed must not contain more than 480 foreign seeds per pound, and should be free from all noxious weeds as listed in Sections 9 and 10, and shall have a high germinating test. Bulk seed shall be high grade common seed in bulk, free from dodder and shall conform with all the requirements of the seed law, and shall be listed as such in the office of the State Commissioner of Agriculture.

Standards for Small Grains, Field Peas and Vetches.

The same three grades have been adopted for small grains, field peas, and vetches, with special requirements for the grades, improved seed and bulk seed. Improved seed must not contain over two per cent mixture of other varieties nor over two per cent of other agricultural plants. Representative samples of threshed and cleaned grain or seed shall not contain over 2 per cent mixture of other varieties, nor over 2 per cent of the agricultural seeds, nor over 2 per cent inert material as shown by analysis, and shall meet requirements of freedom of weeds, as specified by the laws of Washington. Seed of this grade must be well matured and of good vitality. Bulk seed shall be well matured and of good quality, which does not meet the requirements for pedigreed or improved seed and upon inspection is found to contain not more than 5 per cent mixture of the varieties or a 5 per cent mixture of other grains, or more than 1 per cent of inert material, and which meets the requirements of freedom of weeds specified by the laws of Washington.

All crops are inspected in the field, small grains after heading out, and before harvesting, and field peas when in blossom. After threshing, representative samples are taken to the laboratory, analyzed and germination tests run. The information obtained is placed upon the tag at time of sealing the bag, thus identifying its contents.

Fees for Inspection.

No appropriation has been made to carry on seed certification, all expense to be defrayed by the fees collected.

Growers desiring seed certified fill out an application blank and file the same with the Commissioner of Agriculture, together with an application fee of $5.00, which applies on the cost of certification.

Fees for certification have been fixed as follows:

Legumes and cereals, $1.25 per acre, payable as follows: $5.00 with application, 75c before first field inspection, 50c before final inspection.

Potatoes, one to five acres, $4.00 per acre; five to fifteen acres, $2.50 per acre, payable as follows: One to five acres, $7.50, with application, balance before second field inspection. Five to fifteen acres, $7.50, with application; balance before second field inspection. Fifteen acres and over, 30c per acre, with minimum of $7.50, payable with application; balance before second field inspection.

SEED CERTIFIED.

Potato Seed.

The certification of seed potatoes has been the largest crop certified, there being a big demand for this work. In 1919, applications were received for the certification of 451 acres of seed potatoes.

The following table gives the acreage in each county and acreage passing each inspection.

NUMBER OF ACRES OF POTATOES PASSING INSPECTION.

COUNTY	Acres Entered	Passed First Inspection	Passed Second Inspection	Passed Final Inspection
Skagit	243	139.5	20	
Spokane	75	54	37	31
Clarke	68	66.5	49	43.5
Lewis	38	35	16	10
Yakima	22	22	5	5
Grays Harbor	5			
Totals	451	317	127	89.5

Of the 451 acres entered, only 89½ were able to pass final inspection. This makes less than 20 per cent that were able to pass the requirements for seed potatoes, that is, freedom from disease, trueness to variety, vitality and vigor, and adaptability for seed potatoes. That a great deal is lost every year by the planting of poor seed potatoes in this state, is evident when less than 20 per cent of the seed potatoes planted measure up to the requirements of good seed stock. There is no doubt but that the average for the state would be a great deal less than 20 per cent when the fact is taken into consideration that those growers taking up potato seed certification represent our most progressive farmers.

As with animals, so it is with plants, "like produces like." The potato crop of this state will, undoubtedly, be greatly improved in the next few years by the increased use of certified seed potatoes.

Seed Grain.

In Lewis County, 40 acres of oats were certified as improved seed oats, and in the Yakima valley, 15 acres of wheat were certified as pedigreed seed wheat. This comprised the extent of certification of seed grain. A very large field in this work is open, and when the farmers understand the benefits to be derived by using the state's services for certifying their seed grain crops, a big impetus to this work is expected to take place.

Clover Seed.

Fifty-four and one-half acres of red clover grown for seed were entered for certification from the Yakima valley. This clover was inspected in the field for dodder and other noxious weeds. Patches in the fields found infested with such were cut out separately and burned. The forty acres passing inspection was certified as improved clover seed.

The Yakima valley raises annually 500,000 pounds of red clover seed. Unless strict measures are taken to eradicate such pests as the weeds, dodder and green foxtail, their product will never receive a favorable market. If the clover seed farmers would get behind the certification movement, a large successful red clover seed industry will be built up in the Yakima valley. In former years clover seed growers in a certain well-known western state received a premium for their red clover seed in the East, but recently they have allowed Buckhorn plantain to become so prevalent in their fields that their seed has lost its former prestige. The Yakima valley has an opportunity to become one of the leading red clover sections of the Northwest if proper methods were followed.

Certification of Germination of Vegetable Seed.

At the request of certain vegetable seed growers, the Department certified to the germination of vegetable seeds grown by them during the year 1919. Most of this stock was for export. The stocks were sampled by an inspector and the sample sent to the laboratory for test. The usual tag with the test was atached and sealed to each bag of seed.

Over four hundred thousand pounds of vegetable seed were sampled, tested and sealed in this manner. Great dispatch was necessary in the execution of the work, as the greater part of the seed is grown on contract and shipped almost immediately upon threshing.

This work was highly satisfactory to the growers having it done. Ninety per cent of the vegetable seeds produced in this state would be certified for germination if a laboratory was situated so as to give the growers the service they need and should have in the dispatch of their business.

The following table gives the amount of seed certified for germination, the different kinds, and the average per cent of germination of each.

VEGETABLE SEED CERTIFIED FOR GERMINATION.

Kind of Seed.	Number of pounds.	Average percentage of germination.
Turnip	114,680	94.5
Spinach	95,412	57.5
Cabbage	90,480	86.5
Onion	73,480	75.1
Rutabaga	66,586	83.4
Radish	17,060	79.4
Kale	12,240	80.6
Beets	3,980	53.9
Chicory	3,000	69.7
Carrot	480	41.2
Brussels Sprouts	240	97.5
Mustard	240	92.2
Parsnip	240	78.0
Swiss Chard	120	55.0
Total	477,998	

Appropriation.

All the expense connected with the certification work has been covered by fees charged for such work. In an agricultural state such as Washington, such an important work should receive substantial aid from an appropriation by the Legislature. Especially is this true of potato and vegetable seed inspection. Many growers, after paying their fees for potato seed inspection, may have their crop rejected upon the second and even final inspection, necessitating the stock to be sold as table stock. With the large fees necessary at present, such growers are apt to consider the money wasted. No educational campaign or other means will do as much to clean up the potato fields of disease and improve the potato crop in every other respect, as seed certification. The important potato seed states of the East charge fees covering only partially the cost of inspection, the balance of the expense being met by an appropriation. Washington should do as much for its growers. With such aid, more growers would take advantage of the service, and the state would derive the benefits of greatly improved crops.

As shown in a previous paragraph, the vegetable seed industry of this state is large. The seed growers must compete with foreign countries such as Denmark, Holland, etc., where a rigid inspection service is provided by their governments. As a result, European seed finds favor in the United States markets, on account of its trueness to type and variety. The same could be done for the vegetable seed industry of this state. To carry on this work, funds should be available for the employment of at least one inspector trained for such work, who could aid in potato inspections. At present, the work of inspection of the seed trade and field inspections for seed certification, requires the full time of one inspector. If inspection of vegetable and other seeds is added to the duties of the Department, suitable appropriations for additional inspectors should be made.

Respectfully submitted,

J. E. CURREY,
State Seed Inspector.

REPORT ON FOODS, FEEDS, FERTILIZERS, DRUGS, OILS, BAKERY AND RESTAURANT INSPECTIONS.

Honorable F. H. Gloyd,
Commissioner of Agriculture,
Olympia, Washington.

Dear Sir: In compliance with the law, I am submitting herewith the Fourth Biennial Report of the Fourth Division of the State Department of Agriculture, covering the period from July 1st, 1918, to June 30, 1920. The work includes foods, feeds, fertilizers, drugs, oils, bakery and restaurant inspections.

In the management of the affairs of the division, I have endeavored to conduct them in an economical and efficient manner, and in accordance with the policy of the State Administration; viz., to accomplish as much work as possible with the least expense.

The supervision of the food supply of the people and the sanitation of places where food is prepared and handled, demands constant vigilance for the proper protection of the consumer, and the exercise of sound judgment by the inspectors in enforcing the laws, to see that legitimate, established business customs are not disrupted by arbitrary insistence upon the observance of the unimportant technical requirements of the law.

Bearing in mind the charges sometimes made that the present day public demand for cleanliness and purity in the food supply is one of the causes that has added to the cost of household necessities, every effort has been made in enforcing the law to adjust the requirements so they will be practicable in their application to commercial conditions, while having a jealous regard for the rights of the consuming public. The majority of distributors of foods in the state have recognized that the changes in methods that have been insisted upon are equitable, and the merchants have given to the work of improvement their earnest cooperation. The result has been that a general observance of the laws for the protection of the food supply has been secured, with comparatively little friction, and the good results thus obtained will be permanent.

The work of the Division, as a whole, when compared with similar departments in other states on the basis of number of inspections made, towns visited, territory covered, results obtained and the number of people employed, should be among the best. This showing could not have been made were it not for the loyal, earnest and efficient efforts of those associated with me in the work.

During the biennium covered in this report, there were employed in food, feed, fertilizer, bakery and restaurant inspection work, two inspectors all of the time, and three part of the time, in addition to myself; one drug inspector all of the time, and one stock-feed and fertilizer inspector. Their duties carried them to practically every town and city in the state, including out of the way and by-way places, due to the department having Ford cars for this purpose.

They covered the inspection of foods and drugs at the manufacturing plants, factories, wholesale and retail food and drug establishments, as well as bakeries, restaurants, hotels, boarding houses and doctors' offices. Inspections have been made of cold storage and packing plants, slaughter and commission houses, grocery stores and meat markets, feed and flouring mills and stores, bottling works and soda fountains, drug stores, butter stores, bakeries, restaurants, and all other places where foods and drugs, feeds and fertilizers are manufactured, stored or offered for sale.

The total number of inspections made by the Fourth Division during the biennium was 25,916, sub-divided as follows:

Assistant inspections 203, bakeries 240, bottling works 51, butter and egg stores 1,816, confectioneries 156, cold storage plants 84, commission houses 961, doctors' offices 17, drug stores 1,905, extract, coffee and spice houses 49, fish markets 683, fertilizer plants and stores 69, flour and feed mills 1,163, fruit and vegetable stalls 4,406, grocery and general stores 4,296, hospitals and sanitariums 3; hotels and boarding houses 44, manufacturing plants (food) 47, meat markets 3,662, miscellaneous 783, notices 411, packing plants (food) 25, piers, docks, etc. 69; public market stalls 1,020, reinspections 197, restaurants and delicatessens 1,782, seed stores 48, slaughter houses 97, soft drink places 1;298, storage and wholesale plants 14, U. S. reports 12, and wholesale houses 145, with 160 appearances in court.

The foregoing inspections resulted in 314,715 packages of foods and drugs being condemned, including 155 old and insanitary cooking and baking utensils unfit for use in preparing foods for consumption.

When possible, the above condemned food products were used for animal food; when not fit for animal food, they were utilized in the manufacture of fertilizers.

In comparing the inspections and destructions of this with the previous biennium, you will note that during this period there were only 128 more inspections made, and 160,515 more parcels of goods destroyed. This was brought about by unscrupulous manufacturers during the war period trying to get by with unfit for food products, which increased the destructions, and reduced the inspections from what they would have been because of the many prosecutions made that compelled the inspectors to be in court much of the time.

Reports of the different inspections are on file in the Seattle office.

During this biennium, there were 1,389 samples gathered and submitted to the State Chemist for analysis, 457 of which were reported legal and 932 reported illegal. 74 samples were taken which were not submitted because their unfit condition could be readily detected by the senses, making a total of 1,463 samples.

During this biennium, 1,188 towns were visited in thirty-three counties.

PROSECUTIONS.

During this period, there were 264 complaints filed by this Division for violations of the Food, Feed and Bakery Laws, which resulted in 236 convictions, ten forfeited bail, 11 appealed, 3 cases were dismissed, 1 convicted without penalty, 1 acquitted and two cases pending. The fines and forfeitures aggregated $10,755.00. The above prosecutions were made in 16 counties.

FERTILIZERS.

During the biennium, there were 29 fertilizer manufacturers registered 96 brands of fertilizer, containing 295 ingredients, at fee of $6.00 for each ingredient, totaling in revenue to the state $1,770.00. The growers generally have gotten better results from the fertilizers placed on the market this biennium than during the previous period, and as a consequence, we have had fewer complaints.

BAKERIES AND RESTAURANTS.

While there has been a specific bakery law for a number of years, it was not placed under the food department for enforcement until the law was enacted providing for a Department of Agriculture, at the 1913 legislative session. Until this time, the bakery law had lain dormant, and many of the bakeries were in a horribly insanitary condition. Since 1913, we have had a bakery and assistant food inspector who has given her attention to cleaning up the insanitary conditions of bakeries, until now the bakeries of this state will compare favorably with those of any state in the Union as to pure food, cleanliness, etc. During this biennium, there has been carefully inspected 240 bakeries and 1,782 restaurants. The restaurants of the state are in very much better condition than ever before. The bakery inspector has made 7,454 inspections, including bakeries, restaurants and general food establishments.

VINEGAR.

We have had very little trouble during this biennium regarding vinegar. There has been only one complaint recorded. Samples have been taken of the product manufactured by this special manufacturer and submitted to the State Chemist for analysis, but we have not as yet received the analytical report.

VEAL.

There have been only two prosecutions made, during this biennium, for selling immature veal, as compared with twenty-five prosecutions for the same violation during the previous period, showing a great improvement in the veal that is being placed on the market for consumption.

SLAUGHTER HOUSES.

During this biennium, there were 97 rural slaughter houses inspected, with the following results: Passed inspection, 8; notified to improve conditions, 51; closed temporarily, 16, because the insanitary conditions surrounding the slaughtering made the meat product a menace to public health, and they were closed until these conditions were remedied; permanently closed, 14, because the location was absolutely unfit for the purpose. The 51 were given notice to improve conditions such as batten and screen houses to exclude flies, fix drainage, clean killing-bed and walls surrounding same, and to whitewash interior of houses.

COLD STORAGE.

In our Third Biennial Report, we mention the fact of there being an urgent necessity for the regulation of cold storage, and had a bill presented to the 1919 legislative session for enactment into law, placing a time limit on cold storage food products, but for some unknown reason, it died in the rules committee. The enactment of proper cold storage control laws is absorbing the attention of the consuming public of this state today as never before. Cold storing of food products with a time limit is a blessing; without a time limit, it is dangerous to public health and is wasteful. There is a limit to the life and wholesomeness of cold storage food products. Speculation in food supplies is being permitted in every instance to engulf the economic value of cold storage. In our inspection of cold storage plants, we note many tons of food products which while yet fit for human consumption, are deteriorating rapidly, and we have no authority to order them out for sale and immediate consumption, but are restricted to just passing them up until they are absolutely unfit for any other purpose than the incinerator or fertilizing plant. As one instance of this, we now have for destruction approximately 60,000 pounds of frozen cold storage fish, which, had there been a time limit on it, would have gone into the food channels before becoming unfit for human consumption.

We, therefore, feel that it is of vital importance to the tax payers of the state that the 1921 legislative session should enact a law placing a time limit on the cold storing of food products. There will be a bill drawn for this purpose, and we sincerely hope for its enactment, for with the aid of such a law, we could do our bit toward the reduction of the high cost of living.

SANITATION.

In our Third Biennial Report, we suggested and asked for the enactment of a State Sanitary Law, and had a bill for the purpose before the 1919 legislative session, but for some inexplicable reason, that, like the cold storage bill, died in the rules committee.

Cleanliness is the foundation principle for the safeguarding of health and life; therefore, one of the most imperative needs is a State Sanitary Law. The combat for pure and unadulterated food has made colossal progress in the past twenty-four years, but its runningmate, cleanliness, has been mournfully neglected. A great many of our foods that are chemically and bacteriologically pure, are sanitarily unfit for human consumption. Sometimes the best and purest products may become and often do become so contaminated by filthy surroundings and handling that they are more dangerous than the vilest adulterations that flourished in the halcyon days, prior to the enactment of the pure food law. Some few of the food manufacturers who know we have no state sanitary law, continue to manufacture food products under filthy, insanitary conditions, with impunity, and the food department is not fortified with authority to stop their foul practices. A case in mind: Out on the ocean, beyond Moclips, there are two clam canneries which, in cooperation and company with United States inspectors, I visited in the spring of 1919, very near the end of the clam canning season. We found one of them almost immaculate, the proprietor having gone to a great deal of expense to place on the market a clean and wholesome food product. The other was an old, dilapitated building, with no drainage whatever other than the slops to run under the floor and lie there in pools, to become stagnant and foul. In fact, this cannery was insanitary in every respect. I talked to the manager and tried to show him it was to his own self interest to build a new cannery, and tried to educate him in cleanliness.

A promise was made to build a new cannery before another season, but they did not do so. They went through the season, which closed June 1st, 1920, under the same filthy conditions, and the food division, with no law to stop it.

Therefore, on behalf of the consuming public of the state of Washington, and in justice to the legitimate manufacturer of clean and wholesome food products, we ask for the enactment of a stringent, State Sanitary Law, the enforcement of which can be conducted by the food and drug inspectors without any perceptible measure of expense.

OIL.

The State Oil Law, passed some thirteen years ago, was placed under this division for enforcement, when the law was enacted by the 1913 legislative session, making a Department of Agriculture. In 1916, the Commissioner of Agriculture of the state was enjoined against enforcing the oil inspection act, through action brought by the Standard Oil Co. This action was carried to the U. S. Supreme Court, and in April, 1919, the oil law was declared invalid by that Court. Hence, the State of Washington has no state oil law, and we have had numerous complaints of the quality of oil from the purchasers of gasoline, for motor purposes, but are unable to give them any redress.

Therefore, it is imperative that the 1921 legislative session enact a State Oil Law for the protection of the general public.

DRUGS.

The drug inspector, during this period, has made 4,696 inspections, consisting of wholesale and retail drug establishments, hospitals, sanitariums, doctors' offices, bottling works and soda fountains, and general food establishments. His personal report will be found with the Division reports.

GENERAL FOODS.

During this Biennium, there were 4,296 groceries and general stores, and 3,662 meat markets carefully inspected. These inspectors covered conditions and quality of goods exposed and offered for sale to the consuming public, and the sanitary conditions of establishments. The State Food Inspector has worked in conjunction with the Bakery, Drug, Stock Feed Inspectors and myself, and has made, including cold storage plants, commission houses, butter and egg stores, fish markets, and fruit and vegetable stands, a total of 7,243 inspections.

STOCK FEEDS.

The 1919 legislative session enacted a stock feed law which is said by other state departments to be the best in the United States.

The stock feed manufacturers were perfectly satisfied with the law, save that portion of section three, wherein it states: "The manufacturer, importer, dealer or agent, shall place on the outside of each package a tag or label and have plainly printed thereon the minimum percentage of crude fat, minimum percentage of crude protein and maximum percent of crude fiber, which shall not exceed ten per cent (10%)." The last seven words not meeting the approval of the stock feed manufacturers, they petitioned the Superior Court of King County for an order restraining its enforcement, which was granted. The State Department of Agriculture appealed to the State Supreme Court, and in about nine months the lower court was reversed, when this Division proceeded to enforce the law, which has resulted in the stock feeds now being from 50 per cent to 70 per cent better than ever before, and the stock feeders feeling more serene.

INSPECTORS.

I desire to bring your attention to the faithful and efficient services rendered by the inspectors and others connected with this Division in the execution of the duties with which they are charged. A casual perusal of the tabulated statements of the work done by my assistants will but inadequately convey a just conception of their actual accomplishments.

The food, drug and feed inspectors, to be successful, must have the ability to thoroughly familiarize themselves with the actual conditions they meet and explain the laws' requirements. They must be firm but courteous, make themselves acceptable to the people and gain their respect. Our inspectors are all trained people in their respective lines, pulling together harmoniously at all times, and helping each other in their work towards maintaining efficient service.

It is a pleasure to me to recognize the loyal support that I have received from the assistants connected with the Division, and to express my grateful acknowledgment for not only the help they have given to me in the conscientious discharge of the duties assigned them, but for their intelligent initiative in matters having for their object the promotion of the work of the Department in behalf of the consuming public, whose representatives we are.

The detailed inspection reports are on file in the Department, and can be consulted by the public at any time.

Respectfully,

WILL H. ADAMS,

Asst. Commissioner, in Charge Division Foods, Feeds, Etc.

SUMMARY OF INSPECTIONS MADE BY THE STATE DEPARTMENT OF AGRICULTURE, DIVISION OF FOODS, FEEDS, ETC.

INSPECTIONS.

INSPECTIONS MADE	INSPECTORS						
	Adams	Coffin	Collier	Fowler	Henderson	Jones	Totals
Assistant Inspector	50	1	62	....	49	41	203
Bakeries	8	205	18	6	....	3	240
Bottling Works	....	....	....	....	....	51	51
Butter and Egg Stores	330	669	115	....	648	54	1,816
Confectioneries	52	78	8	....	16	2	156
Cold Storage	52	....	6	....	20	6	84
Commission Houses	55	....	1		905	....	961
Doctors' Offices	....	....	....	....	....	17	17
Drug Stores	....	....	7	....	....	1,898	1,905
Extract, Coffee and Spice	....	18	8	....	12	11	49
Fish Markets	304	63	26	....	290	....	683
Fertilizer Plants and Stores	....	....	69	....	....	....	69
Flour and Feed Mills and Stores	8	28	1,114	....	4	9	1,163
Fruit and Vegetable Stalls	794	3,073	25	....	514	....	4,406
Groceries and General Stores	1,540	661	188	....	1,797	110	4,296
Hospitals and Sanitariums	....	....	....	....	....	3	3
Hotels and Bording Houses	....	43	....	....	....	1	44
Manufacturing Plants (Food)	7	26	....	....	1	13	47
Meat Markets	983	172	112	....	2,341	54	3,662
Miscellaneous	12	81	18	....	415	257	783
Notices	....	402	8	....	1	....	411
Packing Plants (Food)	5	4	2	....	14	....	25
Piers, Docks, etc.	43	....	....	....	26	....	69
Public Market Stalls	31	137	....	....	40	812	1,020
Reinspections	....	190	....	....	....	7	197
Restaurants and Delicatessen Stores	111	1,539	37	1	30	64	1,782
Seed Stores	....	....	48	....	....	....	48
Slaughter Houses	22	....	1	....	73	1	97
Soft Drink Places	....	....	43	....	....	1,255	1,298
Storage and Wholesale Plants	6	....	1	....	7	....	14
U. S. Reports	....	12	....	....	....	....	12
Wholesale Houses	111	....	2	....	5	27	145
Totals	4,524	7,402	1,919	7	7,208	4,696	25,756
In Court	40	52	18	....	35	15	160
GRAND TOTALS	4,564	7,454	1,937	7	7,243	4,711	25,916

SUMMARY OF BAKERY INSPECTIONS.

By Bakery Inspector, Mrs. W. H. Coffin.

Number of bakeries inspected			205
Number of towns visited on inspection trips		43	
Number graded as good	132		
Number graded as fair	45		
Number graded as poor	19		
Number graded as bad	2		
	——	198	
Number closed		2	
Number not baking during repairs		5	
		——	205
Number Bakeries having certificates		118	
Number baking without certificate as shops do not meet requirements		74	
Number certificates taken up		6	
Number bakeries closed		2	
Number not baking during repairs		5	
		——	205

SUMMARY OF SLAUGHTER HOUSE INSPECTIONS.

Inspected by G. S. Henderson	73	
Inspected by W. H. Adams	22	
Inspected by E. L. Jones	1	
Inspected by H. H. Collier	1	
	—	97
Passed inspection	8	
Notified to improve conditions	51	
Closed temporarily	16	
Closed permanently	14	
Released	8	
	—	97

OIL INSPECTIONS AND FEES.

SUMMARY.

DATE	Kerosene (Gallons)	Gasoline (Gallons)	Distillate (Gallons)	Total Gallons	Fees
1918—					
July	[illegible]911	1,357,147	95,006	1,492,064	$2,984 28
August	43,104	1,334,424	190,904	1,568,432	3,137 56
September	42,575	1,291,757	83,431	1,417,763	2,835 57
October	119,708	1,284,780	223,770	1,628,258	3,256 49
November	116,765	876,471	152,047	1,145,283	2,298 51
December	201,916	1,125,247	24,883	1,852,046	2,704 11
1919—					
January	62,475	734,172	127,854	924,501	1,850 28
February	19,172	918,298	5,108	942,568	1,885 94
March	112,316	737,124	14,439	863,879	1,727 80
April	7,360	544,923	37,559	589,842	1,179 70
May	33,451	912,736	123,580	*{171,830 {897,937	344 17 ....
11 Months	798,753	11,117,074	1,078,576	12,994,403	$24,199 69

* No fees collected on inspections of 897,987 gallons, made in the month of May, on account of Supreme Court decision which abolished the Washington State Oil Law. No inspections made after June 1, 1919.

Associated Oil Company	Portland, Ore.
Pure Oil Company	Spokane, Wash.
S. M. Reeves Company	South Bend, Wash.
Shell Oil Company	Bellingham, Wash.
Shell Oil Company	Seattle, Wash.
Shell Oil Company	Spokane, Wash.
Shell Oil Company	Tacoma, Wash.
Shell Oil Company	Walla Walla, Wash.
Shell Oil Company	Yakima, Wash.
Shell Oil Company	Portland, Ore.
Union Oil Company	Seattle, Wash.
Union Oil Company	Astoria, Ore.
Union Oil Company	Portland, Ore.

OIL INSPECTIONS—STANDARD OIL COMPANY.

SUMMARY.

DATE	Kerosene	Gasoline	Distillate	Totals
No. 1—SEATTLE, WASH.				
1918—				
July	....	2,378,778	1,672,537	4,051,315
August	369,536	1,515,542	237,092	2,122,170
September	95,210	1,197,787	1,253,998	2,546,995
October	....	4,900,710	365,104	5,265,814
November	551,748	2,507,804	367,587	3,427,129
December	1,036,159	3,135,176	907,069	5,078,404
1919—				
January	226,918	5,016,792	920,827	6,164,537
February	558,371	4,543,616	608,928	5,710,915
March	449,067	2,665,048	....	3,114,115
April	603,568	2,374,883	1,117,962	4,096,413
May	374,665	....	326,371	701,036
Totals	4,265,242	30,236,126	7,777,475	42,278,843
ABERDEEN, WASH.				
1918—				
December	82,840	629,163	81,968	793,971
1919—				
February	....	222,000	54,000	276,000
Totals	82,840	851,163	135,968	1,069,971
PORTLAND, ORE.				
1918—				
July	32,258	360,098	114,977	507,333
August	35,325	272,805	108,736	416,866
September	39,699	369,178	66,252	475,129
October	103,481	248,748	66,083	418,307
November	40,425	154,582	25,940	220,947
December	90,252	42,491	26,224	158,967
1919—				
January	59,893	163,892	3,435	226,220
February	46,358	145,572	36,185	228,115
March	51,902	234,793	34,764	321,459
Totals	499,593	1,991,154	482,596	2,973,343
Seattle	4,265,242	30,236,126	7,777,475	42,278,843
Aberdeen	82,840	851,163	135,968	1,069,971
Portland	499,593	1,991,154	482,596	2,973,343
GRAND TOTALS	4,847,675	33,078,443	8,396,039	46,322,157

SUMMARY.

PRODUCTS:	Report on samples submitted		
Foods.	Legal.		Illegal.
Butter	7		.
Baking powder	19	Below standard	1
Candy	3	Illegal	3
Chocolate	.	Adulterated	3
Cocoa	1		.
Color	.	Illegal	1
Coffee	4		.
Coffee substitutes	1	Illegal	1
Condiments	33	Illegal	12
Cookies	4	Illegal—dye	1
Cream Tartar	1		.
Egg substitutes	.	Misbranded	4
Extracts	17	Illegal	7
Fish (102 cans tested)	8	Illegal (528 cans tested)	11
		Doubtful (105 cans tested)	2
Shellfish	9	Illegal	11
Flour	4		.
Fruits	2	Illegal	2
Honey	8	Misbranded	1
Lard	6		.
Macaroni, spaghetti, noodles	8		.
Meat	41	Illegal	35
Meat seasoning	1		.
Meat papers—wrapping	6		.
Milk	45	Below standard	74
Molasses	8		.
Nuts	.	Illegal	5
Oils—edible	5		.
Olives	8		.
Pie fillers	.	Misbranded	6
Poultry	2		.
Preservatives	7		.
Soft drinks	3	Illegal, 4; misbranded, 1	5
Syrups	7		.
Syrup—Maple	2	Misbranded	74
Sugar	.	Illegal	4
Vegetables	28	Illegal	9
Wires from vegetable dryer	.	Zinc	1
Vinegar	3	Misbranded	1
Wine	.	Alcohol	1
	301		275

PRODUCTS:	Report on samples submitted		
Feeds.	Legal.		Illegal.
Alfalfa	1		.
Barley	3		.
Corn products	4	Illegal	1
Cottonseed products	1		.
Dairy feeds	7	Illegal	3
Hog feeds	2	Illegal	1
Horse feeds	.	Adulterated	1
Mashes	7	Below guarantee	4
Middlings	.	Adulterated	2
Meal—Kaolung	1		.
Rice bran	1		.
Rye, bran and shorts	1		.
Scratch feeds	2		.
Shorts	3	Adulterated	2
	33		14

PRODUCTS:	Report on samples submitted	
Fertilizers.	**Legal.**	**Illegal.**
32 brands	18	20

PRODUCTS:	Report on samples submitted	
Drugs.	**Legal.**	**Illegal.**
Drugs and preparations	11	3

PRODUCTS.	Legal.	Illegal.
Foods	395	895
Feeds	33	14
Fertilizers	18	20
Drugs	11	3
	457	932
	932	
Samples submitted—total	1389	

CONDEMNATIONS.

FOODS:			Totals.
Canned Goods.		No. Cans.	
Assorted (S. S. Salvage)		4,640	
Fish:			
Clams	144		
Crab	79		
Lobster	2		
Oysters	13,344		
Shrimp	14		
Miscellaneous	45		
Fish loaf	81		
Smoked loaf, etc.	151		
Grayfish	655		
Mackerel	1		
Salmon	163		
Sardines	260		
		14,939	
Fruits:			
Apples	82		
Apple butter	22		
Berries	113		
Cherries	6		
Grapes	11		
Oranges	3		
Peaches	1		
Pears	14		
Pie fruits	7		
Pineapple	122		
Plums	4		
Olive Relish	1,061		
		1,446	
Honey		75	

CANNED GOODS—Continued.		No. Cans.	Total.
Meats:			
Assorted	1,787		
Chicken tamales	4		
Dried beef	8		
Cooked brains	24		
Hash	4		
Ham	6		
Lunch tongue	5		
Meat loaf	7		
Mutton—roast	20		
Sausage	34		
Weiners	8		
		1,907	
* Milk		122,567	
Molasses		25	
Vegetables:			
Asparagus	1		
Corn	603		
Hominy	1		
Peas	3,176		
Pork and beans	17		
Pumpkin	5		
Spinach	290		
Tomatoes	1,546		
		5,639	
			151,238

BOTTLED GOODS.		No. Bottles.	Total.
Beef extract		2	
Catsup—ketchup		320	
Jelly		8	
Nectar		4	
Olives		103	
Oyster cocktail		4	
Red peppers		2	
Relish		12	
Sauces and dressings		64	
Pickles		449	
Extracts—Flavoring:			
Almond	2		
Lemon	72		
Lemon—imitation	6		
		80	
			1,048

BULK GOODS.	No. Pounds.	Total.
Baking powder	50	
Bread crumbs	13	
Cheese	80	
Chocolate	1	
Condensed milk	1,200	
Confectionery	153	
Crackers	8	

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* Sub-standard milk amounting to 120,000 cans sent out of the state, but not destroyed.

BULK GOODS—Continued.		No. Pounds.	Total.
Fish:			
Assorted frozen fish	4,843		
Codfish	12,010		
Halibut	289		
Salmon	130		
Salt Mackerel	750		
		18,022	
Flour:			
Assorted substitutes	2,335		
Barley	3,187		
Bean	3,902		
Buckwheat	6		
Corn flour and meal	6,464½		
Cocoanut	40		
Graham	859		
Middlings	97		
Oatmeal and oat flour	480		
Pancake	178		
Potato	50		
Rye	770		
Wheat	1,293		
Whole wheat	549		
		19,655½	
Fruits:			
Apricots	17		
Apples	23		
Currants	12½		
Figs and fig butter	1,425		
Grapes	40		
Loganberries	312		
Peaches	140		
Pears	98		
Prunes	155		
Raisins	3,562		
		5,784½	
Hay, grain, cereals; assorted S. S. salvage stock		100,000	
Lard		27	
Meats			
Assorted cured meats	1,127½		
Bacon	63		
Beef	162		
Corn Beef	225		
Frozen meats	519		
Hamburger	80½		
Liver	1,260		
Miscellaneous	278		
Ox tails	499		
Picnics (pork shoulders)	59		
Pork	261		
Sausage	137½		
Veal—76½ carcasses	3,857		
Weiners	25		
		8,553½	

BULK GOODS—Continued.		No. Pounds.	Total.
Nuts:			
Almonds	330		
Mixed	7½		
Walnuts	200		
		537½	
Poultry:			
Chicken	2,272		
Turkey	155		
Mixed	741		
		3,168	
Vegetables—Dried:			
Corn—on cob	1,500		
Carrots	120		
Mushrooms	10		
Onions	106		
Peas	34		
Potatoes	824		
Sauerkraut	400		
Vegetable soup—dried	231		
		3,225	
Vegetables—Fresh:			
Carrots	40		
Parsnips	40		
Turnips	20		
		100	
			160,578
PACKAGE GOODS.		No. Packages.	Total.
Cereals:			
Farina	254		
Hominy	220		
Assorted	74		
Oats and oatmeal	62		
Sago	8		
Wheat Hearts	32		
		700	
Mince meat		48	748
MISCELLANEOUS.		No. Barrels.	Total.
Cider		160	160.
		No. Crates—Boxes.	
Eggs		36 2-3	
Fruits and Vegetables:			
Apples	69		
Canteloupes	2		
Peaches	1		
Endive	8		
Lettuce—head	69		
Peppers	50		
Tomatoes	168		
		367	
			403 2-3
		No. Gallons.	
Pickles	42		
Mustard	1	43	43
Total number parcels food condemned			314,218 2-3
Total number pieces cooking utensils condemned			155

DRUGS:

Drugs and Chemicals.		No. Packages.	Total.
Miscellaneous Drugs:			
Soaked by water in fire	72		
Quinine capsules	1		
Stock powders	1		
		74	
Patent Medicines:			
Altophorous	1		
Cold cures	38		
Cough cures	16		
Curative syrup	3		
Diarrhoea cures	28		
Diarrhoea mixtures	6		
Dyspepsia cure	1		
Fucus Marina	2		
Headache powders	11		
Headache tablets	2		
Heart cure	1		
Eye lotion	4		
Kidney cures	1		
Miscellaneous	7		
		123	
Pharmaceuticals.			
Citrate of Magnesia	4		
Fluid extracts	2		
Miscellaneous preparations	118		
Sodium phosphate	1		
Seidlitz powders	1		
		126	
Tablets:			
Copperas—½lb. each package	5		
Aspirin—1000 each package	11		
Aspirin— 75 each package	3		
		19	
			342
Total condemnations—parcels			314,715 2-3

SUMMARY.

Foods:			
Canned goods	151,238	cans	
Bottled goods	1,048	bottles	
Bulk goods	160,578	pounds	
Package goods	748	packages	
Miscellaneous	160 403 2-3 43	barrels boxes gallons	
			314,218 2-3
Utensils:	155	pieces	
			155
Drugs:			
Drugs and chemicals	74	packages	
Patent medicines	123	packages	
Pharmaceuticals	126	packages	
Tablets	19	packages	
			342
Total condemnations—parcels			314,715 2-3

FOOD SAMPLES TAKEN AND OTHER SAMPLES NOT SUBMITTED TO STATE CHEMIST FOR ANALYSIS.

Coffee	12	Coffin
Catsup	1	Coffin
Corn meal—wormy	5	Coffin
Bulk Sauce:		
In Lea & Perrin's bottles	9	Coffin
In Heinz's bottles	1	Coffin
Flour—wormy and filthy	15	Coffin
Filth in food.		
Pies with cockroaches, etc.	1 lot	Coffin
Cracker meal	1	Coffin
Potatoes—cooked without washing	4	Coffin
Filth:		
From kitchens	6	Coffin
From refrigerators	4	Coffin
From bakeries	6	Coffin
From restaurants	6	Coffin
Decomposed meat from restaurant	2	Coffin
Rice and milk	1	Coffin
	74 lots	

SUMMARY OF PROSECUTIONS.

CLALLAM COUNTY.

			Fines.
No.	169	State of Washington v. T. W. Vasilatos, Pt. Angeles;	
Cof.		Charge: Misbranding—refilling L. & P. bottles	25.00 and costs
No.	170	State of Washington v. Jetasime Janeretos, Pt. Angeles;	
Cof.		Charge: Maintaining filthy kitchen	25.00 and costs

CLARKE COUNTY.

No.	3202	State of Washington v. R. Fullenweider, Vancouver;	
H.		Charge: Adulterating meat with sulphite	50.00 and costs

COLUMBIA COUNTY.

No.	——	State of Washington v. H. W. Young, Dayton;	
H.		Charge: Adulterating meat with sulphite	25.00 and costs

GRAYS HARBOR COUNTY.

No.	——	State of Washington v. Minard & Co., Elma;	
H.		Charge: Adulterating meat with sulphite	25.00 and costs
No.	352	State of Washington v. Hoquiam Cash Market, Hoquiam;	
H.		Charge: Adulterating meat with sulphite	25 00 and costs
No.	467	State of Washington v. Michigan Meat Market, Aberdeen;	
H.		Charge: Adulterating meat with sulphite	25.00 and costs
No.	468	State of Washington v. Peoples Meat Market, Aberdeen;	
H.		Charge: Adulterating hamburger with "freez-em"	25.00 and costs
No.	309	State of Washington v. A. Braun & Theur, Hoquiam;	
Cof.		Charge: Maintaining filthy restaurant	25.00 and costs
No.	687	State of Washington v. B. Basil, Hoquiam;	
Cof.		Charge: Maintaining filthy restaurant	25.00 and costs
No.	688	State of Washington v. E. E. Eller, Hoquiam;	
Cof.		Charge: Possession decomposed food	25.00 and costs
No.	689	State of Washington v. Jorgen Dahl, Hoquiam;	
Cof.		Charge: Maintaining filthy restaurant	25.00 and costs
No.	690	State of Washington v. Lock Sing, Hoquiam;	
Cof.		Charge: Possession filthy food	25.00 and costs
No.	692	State of Wash. v. E. E. Eller and John Doe, Hoquiam;	
Cof.		Charge: Resisting an officer	25.00 and costs

KING COUNTY.

			Fines.
No.	9504	State of Washington v. D. Manolidis, Seattle;	
A.		Charge: Selling decomposed fruit	10.00 and costs
No.	7720	State of Washington v. M. L. Brown, Seattle;	
A.		Charge; Selling immature veal (2 days jail)	50.00 and costs
No.	8248	State of Washington v. W. T. Luckhurst, Seattle;	
H.		Selling misbranded lemon extract	25.00 and costs
No.	8250	State of Washington v. D. Davies & Co., Seattle;	
H.		Charge: Misbranding flavoring extracts	25.00 and costs
No.	8251	State of Wash. v. Commercial Importing Co., Seattle;	
H.		Charge: Misbranding flavoring extracts	25.00 and costs
No.	7103	State of Washington v. Galbraith, Bacon & Co., Seattle;	
Col.		Charge: Adulterating stock feeds—forfeited bail........	50.00 and costs
No.	7103	State of Washington v. Albers Bros., Seattle;	
Ccl.		Charge: Adulterating stock feeds—forfeited bail........	50.00 and costs
No.	7104	State of Washington v. Jahn & Co., Seattle;	
Col.		Charge: Adulterating stock feeds—forfeited bail........	50.00 and costs
No.	7105	State of Washington v. Chas. H. Lilly Co., Seattle;	
Col.		Charge: Adulterating stock feeds—forfeited bail.....	50.00 and costs
No.	7106	State of Washington v. Frye & Co., Seattle;	
Col.		Charge: Misbranding meat scrap	25.00 and costs
No.	——	State of Wash. v. O. P. Frederickson, Black Diamond;	
H.		Charge: Adulterating hamburger with "freez-em"......	40.00 and costs
No.	——	State of Washington v. Morgan Owens, Roslyn;	
H.		Charge: Adulterating meat with sulphite................	25.00 and costs
No.	8797	State of Washington v. J. R. Evans, Seattle;	
H.		Charge: Adulterating sausage with sulphite	250.00 and costs
No.	8796	State of Washington v. Westlake Meat Co., Seattle;	
H.		Charge: Adulterating hamburger with sulphite.........	250.00 and costs
No.	8798	State of Washington v. Philadelphia Meat Mkt. Seattle;	
H.		Charge: Adulterating sausage with sulphite............	200.00 and costs
No.	8800	State of Washington v. New Rainier Meat Co., Seattle;	
H.		Charge: Adulterating sausage with sulphite............	....
		Case appealed. (See No. 9408.)	
No.	8858	State of Washington v. O. A. Boyen, Seattle;	
H.		Charge: Adulterating hamburger with sulphite..........	....
		Case appealed. (See No. 9390.)	
No.	9215	State of Washington v. New Rainier Meat Co., Seattle;	
H.		Adulterating sausage with sulphite	....
		Case appealed. (See No. 9409.)	
No.	9217	State of Washington v. Women's Exchange, Seattle;	
Cof.		Charge: Maintaining filthy kitchen	100.00 and costs
No.	9218	State of Washington v. Alex. Nickas, Seattle;	
Cof.		Charge: Refilling Lea & Perrin's sauce bottles.........	25.00 and costs
No.	9390	State of Washington v. O. A. Borgen, Seattle;	
H.		Charge: Adulterating hamburger with sulphite..........	....
		(Appealed case No. 8858)—decision upheld..........	250.00 and costs
No.	9408	State of Washington v. New Rainier Meat Co., Seattle;	
H.		Charge: Adulterating sausage with sulphite	....
		(Appealed case No. 8800)—decision upheld; fine reduced to	50.00 and costs
No.	9409	State of Washington v. New Rainier Meat Co., Seattle;	
H.		Charge: Adulterating hamburger with sulphite	....
		(Appealed case No. 9215)—decision upheld	250.00 and costs
No.	9416	State of Washington v. Frank Smith, Seattle;	
Cof.		Charge: Maintaining filthy bakery	50.00 and costs
No.	9853	State of Washington v. Wm. K. Lee, Seattle;	
Cof.		Charge: Obstructing an officer	10.00 and costs
No.	9902	State of Washington v. Charles Stutz, Seattle;	
H.		Charge: Adulterating meat with sulphite	200.00 and costs
No.	——	State of Washington v. New York Lunch, Seattle;	
Cof.		Charge: Possession filthy flour—forfeited bail	100.00 and costs

		Fines.
No. 11033	State of Washington v. Otto Wolf (Good Eats), Seattle;	
Cof.	Charge: Possession filthy food—forfeited bail	200.00 and costs
No. 11034	State of Washington v. Panama Cafeteria, Seattle;	
Cof.	Charge: Possession filthy food—forfeited bail	200.00 and costs
No. 11165	State of Washington v. W. F. Jahn & Co., Seattle;	
Col.	Charge: Failure to brand feed	100.00 and costs
No. 11266	State of Washington v. F. C. Berry—F. C. Krebs, Seattle;	
Cof.	Charge: Maintaining filthy food establishment—for. bail.	200.00 and costs
No. 11212	State of Washington v. Ray Young, Seattle;	
Cof.	Charge: Selling filthy flour—(appealed, No. 9669)	
No. 11573	State of Washington v. C. Kruse, Seattle;	
H.	Charge: Misbranding sausage	25.00 and costs
No. 11580	State of Washington v. A. Otto, Seattle;	
H.	Charge: Misbranding sausage	25.00 and costs
No. 10608	State of Washington v. Tony Pappas, Seattle;	
Cof.	Charge: Possession filthy food (Appealed, No. 9691)	
No. 11696	State of Washington v. M. L. Brown, Seattle;	
H.	Charge: Selling immature veal	125.00 and costs
No. 11861	State of Washington v. Albers Bros. Mill Co., Seattle;	
Col.	Charge: Misbranding poultry feed	100.00 and costs
No. 11595	State of Washington v. Bergoust Davies Co., Seattle;	
H.	Charge: Adulteration of food (mustard)	50.00 and costs
No. 12043	State of Washington v. Galbraith & Co., Seattle;	
Col.	Charge: Misbranding concentrated feeding stuffs	100.00 and costs
No. 11962	State of Washington v. T. Terao, Seattle;	
Cof.	Charge: Possession filthy flour	50.00 and costs
No. 12070	State of Washington v. Globe Milling Co., Seattle;	
Col.	Charge: Misbranding a feeding stuff	100.00 and costs
No. 9691	State of Washington v. Tony Pappas, Seattle;	
Cof.	Charge: Possession filthy food	
	(Appealed Case No. 10608)—decision upheld	50.00 and costs
No. 9669	State of Washington v. Ray Young, Seattle;	
Cof.	Charge: Selling filthy flour	
	(Appealed case No. 11212)—dismissed on point of law.	
No. ——	State of Washington v. W. J. Clark, Seattle;	
H.	Charge: False advertising (other for spring lamb); case dismissed	
No. 12249	State of Washington v. F. Messmer & Anderson, Seattle;	
Cof.	Charge: Misbranding—bulk sauce in L. & P. bottles	25.00 and costs
No. 12250	State of Washington v. George Ford, Seattle;	
Cof.	Charge: Possession filthy flour and cornmeal	25.00 and costs
No. 12251	State of Washington v. Kahm, Seattle;	
Cof.	Charge; Possession filthy flour and cornmeal	25.00 and costs
No. 12253	State of Wash. v. J. Gregoren (Apollo Cafe), Seattle;	
Cof.	Charge: Misbranding—bulk sauce in L. & P. bottles	25.00 and costs
No. 12254	State of Washington v. Seattle Hotel, Seattle;	
Cof.	Charge: Possession filthy flour	25.00 and costs
No. 12255	State of Washington v. G. Tamma, Seattle;	
Cof.	Charge: Misbranding—bulk sauce	25.00 and costs
No. 12266	State of Wash. v. J. Gregoren (Apollo Cafe), Seattle;	
Cof.	Charge: False advertising (other syrup as maple)	10.00
No. 12267	State of Washington v. John & Peter Ljubetich—Overland Cafe and Oyster House, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)	10.00
No. 12268	State of Washington v. La Belle Restaurant, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)	10.00
No. 12269	State of Washington v. Red Star Lunch, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)	10.00
No. 12270	State of Washington v. Palace Restaurant, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)	10.00

		Fines.
No. 12271	State of Washington v. The Grand Restaurant, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12272	State of Washington v. Don's Oyster House, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12273	State of Washington v. Palace Cafe, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12274	State of Washington v. Butternut Cafe, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12275	State of Washington v. Northland Cafe, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12277	State of Washington v. Union Bakery and Rest., Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12276	State of Washington v. Marion Bakery, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12278	State of Washington v. Seattle Bakery and Rest., Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12279	State of Washington v. Pike Cafe, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12285	State of Washington v. Richmond Cafe, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12286	State of Washington v. Brill & Kruse, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12289	State of Washington v. Peterson's Cafe, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12290	State of Washington v. Washington Annex Cafe, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12291	State of Washington v. White Lunch, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12294	State of Washington v. Liberty Cafe, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12293	State of Wash. v. Queen Waffle and Chop House, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12295	State of Washington v. Hotel Frye, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12296	State of Washington v. Hotel Stevens Cafe, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12297	State of Washington v. Pig'n Whistle, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12298	State of Wash. v. San Francisco Oyster House, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12299	State of Washington v. California Oyster House. Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12300	State of Washington v. Wood's Cafe, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12301	State of Washington v. White Lunch Co., Inc., Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12302	State of Washington v. Puss'n Boots, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12304	State of Wash. v. Lotus Cafe and Oyster House, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12305	State of Wash. v. The Tivoli Bakery and Rest., Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12306	State of Washington v. Steen's Cafe, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12307	State of Washington v. Maritime Cafe, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12308	State of Washington v. Calhoun Hotel Cafe, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00
No. 12309	State of Seattle v. New York Lunch. Seattle;	
Cof.	Charge: False advertising (other syrup as maple)......	10.00

		Fines.
No. 12287	State of Washington v. The People's Cafe, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)	10.00
No. 12288	State of Washington v. Coffee Inn, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)	10.00
No. 12303	State of Washington v. Butler Hotel Grill, Seattle;	
Cof.	Charge: False advertising (other syrup as maple)	10.00
No. 12894	State of Wash. v. Donald Larke & C. A. Hawkins, Seattle;	
J.	Charge: Misbranding Lysol ($25.00 each)	50 00

KITSAP COUNTY.

No. 207	State of Washington v. T. Totten, Port Orchard;	
H.	Charge: Treating meat with sulphite	25.00 and costs
No. 210	State of Washington v. G. Larsen, Poulsbo;	
H.	Charge: Selling diseased meat	75.00 and costs
No. 183	State of Washington v. John Arien, Bremerton;	
Cof.	Charge: Possession of filthy food	25.00 and costs
No. a-193	State of Washington v. Andrus Pappas, Bremerton;	
Cof.	Charge: Possession decomposed meat	25.00 and costs
No. b-193	State of Washington v. Mr. Showman, Bremerton;	
Cof.	Charge: Maintaining filthy restaurant	25.00 and costs
No. 203	State of Washington v. Fong Tai, Bremerton;	
Cof.	Charge: Maintaining filthy restaurant	25.00 and costs
No. 204	State of Washington v. A. Yamashita, Bremerton;	
Cof.	Charge: Maintaining filthy kitchen	25.00 and costs

KITTITAS COUNTY.

No. ——	State of Washington v. G. Birkmeire, Cle Elum;	
H.	Charge: Adulterating meat with sulphite	25.00 and costs
No. ——	State of Washington v. Chas. Durrwachter, Cle Elum;	
H.	Charge: Maintaining a public nuisance	10.00 and costs

LEWIS COUNTY.

No. 583	State of Washington v. Wm. Rogers, Centralia;	
Cof.	Charge: Possession filthy food	25.00 and costs
No. 584	State of Washington v. O. W. Neelands and H. D. White, Centralia;	
Cof.	Charge: Possession of wormy flour	25.00 and costs

PIERCE COUNTY.

No. 11588	State of Washington v. John and Mike Beck, Tacoma;	
Cof.	Charge: Possession of filthy flour	50.00 and costs
No. 11589	State of Washington v. John and Mike Beck, Tacoma;	
Cof.	Charge: Possession of filthy flour	50.00 and costs
No. 11590	State of Washington v. John and Mike Beck, Tacoma;	
Cof.	Charge: Unsanitary plumbing in bakery	50.00 and costs
No. ——	State of Washington v. Swan Sampson, Tacoma;	
Cof.	Charge: Refilling L. & P. sauce bottles—forfeited bond	25.00 and costs
No. 11591	State of Washington v. John and Mike Beck, Tacoma;	
Cof.	Charge: Possession filthy cocoanut—forfeited bond	50.00 and costs
No. 11603	State of Washington v. N. Nokamura, Tacoma;	
Cof.	Charge: Possession of filthy flour	50.00 and costs
No. 11604	State of Washington v. I. Suylmaga, Tacoma;	
Cof.	Charge: Possession filthy meal	50.00 and costs
No. 11602	State of Washington v. Hebb Cereal Co., Tacoma;	
Cof.	Charge: Possession filthy rye flour	50.00 and costs
No. 11606	State of Washington v. Paul Mames, Tacoma;	
Cof.	Charge: Possession filthy cider	50.00 and costs
No. 11608	State of Washington v. H. J. Inveen, Tacoma;	
Cof.	Charge: Possession filthy peas and pickles	50.00 and costs
No. 11607	State of Washington v. W. E. O'Donnell, Tacoma;	
Cof.	Charge: Possession filthy cider	50.00 and costs

		Fines.
No. 11609	State of Washington v. H. Harinch, Tacoma;	
Cof.	Charge: Possession filthy flour	50.00 and costs
No. 11610	State of Washington v. I. Oyle, Tacoma;	
Cof.	Charge: Possession of filthy food	75.00 and costs
No. 11611	State of Washington v. G. Inoyige, Tacoma;	
Cof.	Charge: Possession filthy food (30 days jail)	100.00 and costs
No. 11612	State of Washington v. E. J. Torklef, Tacoma;	
Cof.	Charge: Possession filthy flour	75.00 and costs
No. 11613	State of Wash. v. Puget Sound Flouring Mill, Tacoma;	
Cof.	Charge: Maintaining public nuisance	500.00 and costs
No. 11614	State of Washington v. Miller Bros. Creamery, Tacoma;	
Cof.	Charge: Possession filthy food products	100.00 and costs
No. 11615	State of Washington v. I. & N. Narzano, Tacoma;	
Cof.	Charge: Possession of filthy food	50.00 and costs
No. 11617	State of Washington v. Albers Bros., Tacoma;	
Cof.	Charge: Possession filthy food	100.00 and costs
No. 11618	State of Wash. v. Tacoma Biscuit & Candy Co., Tacoma;	
Cof.	Charge: Possession filthy food	100.00 and costs
No. 11621	State of Washington v. Alex A. Myher, Tacoma;	
Cof.	Charge: Maintaining filthy store	75.00 and costs
No. 11622	State of Washington v. Robert McLean, Tacoma;	
Cof.	Charge: Maintaining filthy grocery	75.00 and costs
No. 11623	State of Washington v. A. B. Kennedy, Tacoma;	
Cof.	Charge: Maintaining filthy grocery	35.00 and costs
No. 11625	State of Washington v. Chamber of Commerce, Tacoma;	
Cof.	Charge: Possession of filthy food	50.00 and costs
No. 11624	State of Washington v. Joe Simon, Tacoma;	
Cof.	Charge: Possession of filthy food	35.00 and costs
No. 11627	State of Wash. v. H. Galbrett & L. G. Parsons, Tacoma;	
Cof.	Charge: Possession of filthy food	50.00 and costs
No. 11628	State of Washington v. Mrs. M. E. Crow, Tacoma;	
Cof.	Charge: Possession of filthy food	25.00 and costs
No. 11629	State of Washington v. James La Blanc, Tacoma;	
Cof.	Possession of filth (food establishment)	25.00 and costs
No. 11630	State of Washington v. Donnelly Cafe, Tacoma;	
Cof.	Charge: Possession of filthy food	100.00 and costs
No. 14579	State of Washington v. Tacoma Grain Co., Tacoma;	
Cof.	Charge: Operating filthy mill (food products)	
	Case appealed. (See No. 23507.)	
No. 14580	State of Washington v. Keystone Flour Co., Tacoma;	
Cof.	Charge: Operating filthy mill (food products)	
	Case appealed. (See No. 23579.)	
No. 14581	State of Washington v. Sperry Mill Co., Tacoma;	
Cof.	Charge: Operating filthy mill (food products)	
	Case appealed. (See No. 23580.)	
No. 14578	State of Washington v. Puget Sound Mill, Tacoma;	
Cof.	Charge: Operating filthy mill (food products)	
	Case appealed. (See No. 23581.)	
No. 7176	State of Washington v. Judd Smith, Spanaway;	
H.	Charge: Selling horse meat for beef	
	Case appealed. (See No. ——.)	
No. 7177	State of Washington v. Judd Smith, Spanaway;	
H.	Charge: Adulterating hamburger with "freez-em"	
	Case appealed. (See No. ——.)	
No. 7178	State of Washington v. Henningsen Produce Co., Tacoma;	
H.	Charge: Possession sub-standard milk—bail forfeited	25.00 and costs
No. 12087	State of Wash. v. Commercial Importing Co., Tacoma;	
Cof.	Charge: Selling coffee substitute not properly branded	25.00 and costs
No. 12088	State of Washington v. Wood Coffee Co., Tacoma;	
Cof.	Charge: Selling coffee substitute not properly branded	25.00 and costs

		Fines.
No. 23507 Cof.	State of Washington v. Tacoma Grain Co., Tacoma; Charge: Maintaining filthy mill; appealed case No. 14579; decision upheld; fine reduced from $200.00 to	50.00 and costs
No. 23579 Cof.	State of Washington v. Keystone Cereal Co., Tacoma; Charge: Maintaining filthy mill; appealed case No. 14580; decision upheld; fine reduced from $200.00 to	50.00 and costs
No. 23580 Cof.	State of Washington v. Sperry Mill Co., Tacoma; Charge: Maintaining filthy mill; appealed case No. 14581; decision upheld; fine reduced from $200.00 to	50.00 and costs
No. 23581 Cof.	State of Wash. v. Puget Sound Flouring Mill, Tacoma; Charge: Maintaining filthy mill; appealed case No. 14578; decision upheld; fine reduced from $200.00 to	50.00 and costs
No. —— H.	State of Washington v. Judd Smith, Tacoma; Charge: Selling horse meat for beef; appealed case No. 7176; decision upheld; fine reduced from $200.00 to	150.00 and costs
No. —— H.	State of Washington v. Judd Smith, Tacoma; Charge: Adulterating hamburger with "freez-em"; appealed case No. 7177; decision upheld; fine reduced from $200.00 to	75.00 and costs
No. 11630 Cof.	State of Washington v. Donnelly Cafe, Tacoma; Charge: Possession filthy food; case appealed; pleaded guilty; fine reduced from $100.00 to	75.00 and costs
No. 12322 Cof.	State of Washington v. Frank Magrina, Tacoma; Charge: Possession filthy food—filthy refrigerator	50.00 and costs
No. 12328 H.	State of Washington v. Ed Delin, Tacoma; Charge: Misbranding butter	25.00 and costs
No. 12329 H.	State of Washington v. F. M. Albers, Tacoma; Charge: Misbranding butter	25.00 and costs
No. 12330 H.	State of Washington v. L. P. Larson, Tacoma; Charge: Misbranding butter	25.00 and costs
No. 12364 Col.	State of Washington v. W. H. Kenworthy & Co., Tacoma; Charge: Misbranding poultry feed	100.00 and costs

SKAGIT COUNTY.

No. 573 Cof.	State of Washington v. Gus Castacos, Mt. Vernon; Charge: Possession filthy food	50.00 and costs

SNOHOMISH COUNTY.

No. —— H.	State of Washington v. G. O. Hawlen, Marysville; Charge: Adulterating hamburger with "freez-em"	25.00 and costs
No. —— H.	State of Washington v. Geo. Murphy, Arlington; Charge: Adulterating hamburger with sulphite	25.00 and costs
No. 137 Cof.	State of Washington v. H. Satterson-Geo. Rigas, Monroe; Charge: Maintaining filthy restaurant	25.00 and costs
No. —— H.	State of Washington v. A. C. Snider, Everett; Charge: False advertising; acquitted	
No. —— H.	State of Washington v. A. G. Broadbent, Granite Falls; Charge: Adulterating hamburger with "freez-em"	25.00 and costs
No. D2-C1 Cof.	State of Washington v. C. Rasmussen, Granite Falls; Charge: Possession of wormy flour	25.00 and costs

SPOKANE COUNTY.

No. 2196 Cof.	State of Washington v. H. N. Wilcox, Spokane; Charge: Possession filthy flour	50.00 and costs
No. 2197 Cof.	State of Washington v. M. D. Keith, Spokane; Charge: Possession filthy flour	25.00 and costs
No. 2239 Cof.	State of Washington v. D. C. Allen, Spokane; Charge: Possession filthy food	25.00 and costs
No. 2241 Cof.	State of Washington v. L. H. Knapp, Spokane; Charge: Refilling Lea & Perrin's and Heinz's bottles	25.00 and costs

		Fines.
No. 2242	State of Washington v. A. P. Wilkes, Spokane;	
Cof.	Charge: Possession filthy food	25.00 and costs
No. 2243	State of Washington v. Mike Vingo, Spokane;	
Cof.	Charge: Refilling Heinz's bottles with Old English Sauce	25.00 and costs
No. 2500	State of Washington v. Y. Kondo, Cheney;	
Cof.	Charge: Possession filthy food	25.00 and costs
No. ——	State of Washington v. Thos. King, Spokane;	
Cof.	Charge: Refilling Lea & Perrin's bottles	25.00 and costs
No. 4818	State of Washington v. Farmers' Meat Market, Spokane;	
H.	Charge: Selling sausage with cereal without labeling	75.00 and costs
No. 4819	State of Washington v. Hathaway Meat Market, Spokane;	
H.	Charge: Selling artificially colored sausage without labeling	25.00 and costs
No. 4821	State of Washington v. Palace Meat Market, Spokane;	
H.	Charge: Selling artificially colored sausage without labeling	25.00 and costs
No. 4822	State of Wash. v. M. Guidotti Meat Market, Spokane;	
H.	Charge: Selling artificially colored sausage without labeling	25.00 and costs
No. 4823	State of Washington v. City Hall Meat Market, Spokane;	
H.	Charge: Selling artificially colored sausage without labeling	25.00 and costs
No. 4824	State of Washington v. Main Avenue Market, Spokane;	
H.	Charge: Selling sausage with cereal without labeling	25,00 and costs
No. 4825	State of Washington v. Kellengen Meat Market, Spokane;	
H.	Charge: Selling artificially colored sausage without labeling	25.00 and costs
No. 4829	State of Wash. v. Commercial Creamery Co., Spokane;	
H. & J.	Charge: Selling sub-standard cond. milk (Yeloban brand) In Kennewick.	25.00 and costs
No. 4830	State of Wash. v. Commercial Creamery Co., Spokane;	
H. & J.	Charge: Selling sub-standard cond. milk (Yeloban brand) In Republic.	25.00 and costs
No. 4831	State of Wash. v. Commercial Creamery Co., Spokane;	
H. & J.	Charge: Selling sub-standard cond. milk (Yeloban brand) In Curlew.	25.00 and costs
No. 4832	State of Wash. v. Commercial Creamery Co., Spokane;	
H. & J.	Charge: Selling sub-standard cond. milk (Yeloban brand) In Danville.	25.00 and costs
No. 4833	State of Wash. v. Commercial Creamery Co., Spokane;	
H. & J.	Charge: Selling sub-standard cond. milk (Yeloban brand) In Republic.	25.00 and costs
No. 4834	State of Wash. v. Commercial Creamery Co., Spokane;	
H. & J.	Charge: Selling sub-standard cond. milk (Yeloban brand) In Molson.	25.00 and costs
No. 4835	State of Wash. v. Commercial Creamery Co., Spokane;	
H. & J.	Charge: Selling sub-standard cond. milk (Cardinal brand) In Connell.	25.00 and costs
No. 4836	State of Wash. v. Commercial Creamery Co., Spokane;	
H. & J.	Charge: Selling sub-standard cond. milk (Cardinal brand) In Colfax.	25.00 and costs
No. 4837	State of Wash. v. Commercial Creamery Co., Spokane;	
H. & J.	Charge: Selling sub-standard cond. milk (Cardinal brand) In Spokane.	25.00 and costs
No. 4838	State of Wash. v. Commercial Creamery Co., Spokane;	
H. & J.	Charge: Selling sub-standard cond. milk (Yeloban brand) In Spokane.	25.00 and costs
No 4839	State. of Wash. v. Commercial Creamery Co., Spokane;	
H. & J.	Charge: Selling sub-standard cond. milk (Yeloban brand) In Spokane.	25.00 and costs

			Fines.
No. 4840	H. & J.	State of Wash. v. Commercial Creamery Co., Spokane; Charge: Selling sub-standard cond. milk (Yeloban brand) In Spokane.	25.00 and costs
No. 4841	H. & J.	State of Wash. v. Commercial Creamery Co., Spokane; Charge: Selling sub-standard cond. milk (Yeloban brand) In Spokane.	25.00 and costs
No. 4842	H. & J.	State of Wash. v. Commercial Creamery Co., Spokane; Charge: Selling sub-standard cond. milk (Yeloban brand) In Spokane.	25.00 and costs
No. 4843	H. & J.	State of Wash. v. Commercial Creamery Co., Spokane; Charge: Selling sub-standard cond. milk (Yeloban brand) In Spokane.	25.00 and costs
No. 4844	H. & J.	State of Wash. v. Commercial Creamery Co., Spokane; Charge: Selling sub-standard cond. milk (Yeloban brand) In Spokane.	25.00 and costs
No. 4845	H. & J.	State of Wash. v. Commercial Creamery Co., Spokane; Charge: Selling sub-standard cond. milk (Yeloban brand) In Palouse.	25.00 and costs
No. 4846	H. & J.	State of Wash. c. Commercial Creamery Co., Spokane; Charge: Selling sub-standard cond. milk (Yeloban brand) In Garfield.	25.00 and costs
No. 4847	H. & J.	State of Wash. v. Commercial Creamery Co., Spokane; Charge: Selling sub-standard cond. milk (Yeloban brand) In Palouse.	25.00 and costs
No. 4848	H. & J.	State of Wash. v. Commercial Creamery Co., Spokane; Charge: Selling sub-standard cond. milk (Yeloban brand) In Tonasket.	25.00 and costs
No. 4849	H. & J.	State of Wash. v. Commercial Creamery Co., Spokane; Charge: Selling sub-standard cond. milk (Yeloban brand) In Tekoa.	25.00 and costs
No. 4850	H. & J.	State of Wash. v. Commercial Creamery Co., Spokane; Charge: Selling sub-standard cond. milk (Yeloban brand) In Sprague.	25.00 and costs
No. 4851	H. & J.	State of Wash. v. Commercial Creamery Co., Spokane; Charge: Selling sub-standard cond. milk (Yeloban brand) In Okanogan.	25.00 and costs
No. 4915	J.	State of Washington v. Rockaway Cafe, Spokane; Charge: Misbranding other syrup as maple.............	25.00 and costs
No. 4916	J.	State of Washington v. Staples Cafe, Spokane; Charge: Misbranding other syrup as maple.............	25.00 and costs
No. 4917	J.	State of Washington v. White's Cafe, Spokane; Charge: Misbranding other syrup as maple.............	25.00 and costs
No. 4918	J.	State of Washington v. The Oasis, Spokane; Charge: Misbranding other syrup as maple.............	25.00 and costs
No. 4919	J.	State of Wash. v. Culbertson & Grote Rankin, Spokane; Charge: Misbranding other syrup as maple.............	25.00 and costs
No. 4920	J.	State of Washington v. Model Cafe, Spokane; Charge: Misbranding other syrup as maple.............	25.00 and costs
No. 4921	J.	State of Washington v. Davenport's Coffee Shop, Spokane; Charge: Misbranding other syrup as maple.............	25.00 and costs
No. 4922	J.	State of Washington v. Baltimore Cafeteria, Spokane; Charge: Misbranding other syrup as maple.............	25.00 and costs
No. 4923	J.	State of Washington v. Big Seven Cafe, Spokane; Charge: Misbranding other syrup as maplo.............	25.00 and costs
No. 4924	J.	State of Washington v. Wolffe's Cafe, Spokane; Charge: Misbranding other syrup as maple.............	25.00 and costs
No. 4925	J.	State of Washington v. Victoria Cafe, Spokane; Charge: Mishranding other syrup as maple.............	25.00 and costs
No. 4973	J.	State of Washington v. Adam Brown, Spokane; Charge: Selling artificially colored sausage without brand	25.00 and costs

			Fines.
No.	4999	State of Washington v. Spokane Seed Co., Spokane;	
Col.		Charge: Misbranding feeds	100.00 and costs
No.	——	State of Washington v. Inland Seed Company, Spokane;	
Col.		Charge: Misbranding feeds	100.00 and costs

THURSTON COUNTY.

No.	607	State of Washington v. Louis Dornecker, Olympia;	
Cor.		Charge: Possession filthy bakery	100.00 and costs
No.	613	State of Washington v. Sam Lun, Olympia;	
Cof.		Charge: Possession filthy flour	25.00 and costs
No.	614	State of Washington v. O. Sing, Olympia;	
Cof.		Charge: Maintaining filthy restaurant	100.00 and costs
No.	615	State of Washington v. O. Sing, Olympia;	
Cof.		Charge: Maintaining filthy restaurant	100.00 and costs
No.	611	State of Washington v. F. L. Lynn, Olympia;	
Cof.		Charge: Possession filthy food	25.00 and costs
No.	612	State of Washington v. Nick Anagnoston, Olympia;	
Cof.		Charge: Possession filthy flour	25.00 and costs

WHATCOM COUNTY.

No.	2224	State of Washington v. Walter H. Armstrong, Bellingham;	
Cof.		Charge: Possession filthy flour	25.00 and costs
No.	2343	State of Washington v. Damascus Liakatos & Moran, Bellingham;	
Cof.		Charge: Maintaining filthy candy kitchen	25.00 and costs
No.	2342	State of Washington v. Geo. H. Smaby, Bellingham;	
Cof.		Charge: Maintaining filthy candy kitchen; convicted but not fined	....
No.	D-83	State of Washington v. S. Sakamato, Bellingham;	
Cof.		Charge: Maintaining filthy grocery store	25.00 and costs
No.	2368	State of Washington v. Chas. H. Lilly Co., Bellingham;	
Col.		Charge: Misbranding and adulterating stock feed	25.00 and costs
No.	2398	State of Washington v. J. N. Hermsen, Bellingham;	
H.		Charge: Adulterating hamburger with sulphite	25.00 and costs
No.	2670	State of Washington v. H. Dawson (Dawson Chop House), Bellingham;	
H.		Charge: False advertising—other syrup as maple	30.00 and costs
No.	2671	State of Wash. v. H. Frank (Victory Cafe), Bellingham;	
H.		Charge: False advertising—other syrup as maple	30.00 and costs

WHITMAN COUNTY.

No.	2	State of Washington v. A. M. Hanson-R. M. Crosby, Oakesdale;	
Cof.		Charge: Adulterating hamburger with "Freez-em"	25.00 and costs
No.	——	State of Washington v. F. A. Schnurr, Farmington;	
H.		Charge: Maintaining public nuisance	10.00 and costs

YAKIMA COUNTY.

No.	——	State of Washington v. Joe Starr, Yakima;	
H.		Charge: Selling decomposed meat	50.00 and costs
No.	——	State of Washington v. J. S. Soden, Toppenish;	
H.		Charge: Adulterating hamburger with "Freez-em"	25.00 and costs
No.	——	State of Washington v. I. I. Siegel, Toppenish;	
H.		Charge: Adulterating hamburger with "Freez-em"	25.00 and costs
No.	——	State of Washington v. Joe Starr, Yakima;	
H.		Charge: Offering unwholesome meat for sale	50.00 and costs
		Case appealed; appeal withdrawn; judgment paid and costs.	
No.	1500	State of Wash. v. B. Sakada (Yakima Cafe), Yakima;	
A.		Charge: Misbranding other syrup as maple	25.00 and costs

			Fines.
No.	1501	State of Wash. v. H. A. Sherman (Doenut Cafe), Yakima;	
A.		Charge: Misbranding other syrup as maple	25.00 and costs
No.	1502	State of Washington v. Munakia (N. P. Cafe), Yakima;	
A.		Charge: Misbranding—selling other for maple syrup	25.00 and costs
No.	1503	State of Wash. v. Nakamura (Sunrise Cafe), Yakima;	
A.		Charge: Misbranding other syrup as maple	25.00 and costs
No.	1504	State of Wash. v. F. C. Keppert Waffle House, Yakima;	
A.		Charge: Misbranding other syrup as maple	25.00 and costs
No.	——	State of Wash. v. Rasa Miller (Diamond Cafe), Yakima;	
A.		Charge: Misbranding other syrup as maple	25.00 and costs
No.	1518	State of Wash. v. W. F. Selaas (Donnelly Cafe), Yakima;	
A.		Charge: Misbranding other syrup as maple	
		Case dismissed; bills of fare were left by former proprietor.	
No.	1586	State of Washington v. L. H. DeWald, Toppenish;	
A.		Charge: Misbranding and selling shoulders as hams	50.00 and costs
No.	1600	State of Washington v. C. R. Fairweather, Outlook:	
A.		Charge: Misbranding and selling shoulders as hams	25.00 and costs
No.	——	State of Washington v. G. Dervalis, Yakima;	
Cof.		Charge: Misbranding—bulk sauce in L. & P. bottles	25.00 and costs
No.	——	State of Washington v. J. Thomas, Yakima;	
Cof.		Charge: Misbranding—bulk sauce in L. & P. bottles	25.00 and costs
No.	——	State of Washington v. J. Thomas (restaurant), Yakima;	
Cof.		Charge: Possession putrid meat	40.00 and costs
No.	——	State of Washington v. G. Dervalis (restaurant), Yakima;	
Cof.		Charge: Possession putrid meat	40.00 and costs
No.	——	State of Washington v. J. M. Sakamura, Yakima;	
Cof.		Charge: Possession filthy food	25.00 and costs
No.	——	State of Washington v. T. Thomas, John Venson and A. Demaskas, Yakima;	
Cof.		Charge. Illegal use of milk cans	10.00 and costs
No.	——	State of Washington v. Wong Young, Yakima;	
Cof.		Charge: Possession of filthy flour and filthy food	100.00 and costs
No.	——	State of Washington v. M. Munekino, Yakima;	
Cof.		Charge: Possession of filthy food	25.00 and costs
No.	——	State of Washington v. B. Sakuda, Yakima;	
Cof.		Charge: Illegal use of milk can	35.00 and costs
No.	——	State of Washington v. A. B. Hale and G. Cezek, Yakima;	
Cof.		Charge: Possession of filthy flour	25.00 and costs
			$10,705.00 and costs

Counties.	Cases.	Fines.
Clallam County	2	$50.00
Clarke County	1	50.00
Columbia County	1	25.00
Grays Harbor County	10	250.00
King County	39	4,065.00
Kitsap County	7	225.00
Kittitas County	2	35.00
Lewis County	2	50.00
Pierce County	50	2,945.00
Skagit County	1	50.00
Snohomish County	6	125.00
Spokane County	52	1,525.00
Thurston County	6	375.00
Whatcom County	8	185.00
Whitman County	2	35.00
Yakima County	23	715.00
Totals—16 counties	262 Cases	$10,705.00 and costs

Complaints filed		262
Cases Dismissed	3	
Acquitted	1	
Forfeited bail	10	
Appealed	11	
Convicted without penalty	1	
Convicted and fined	236	
		262

Will H. Adams, Chief Fourth Division	11 cases	
Mrs. W. H. Coffin, Bakery, Restaurant and Food Inspector	145 cases	
H. H. Collier, Feeds, Fertilizer and Food Inspector	13 cases	
G. S. Henderson, Food Inspector	57 cases	
Edw. L. Jones, Drug and Food Inspector	13 cases	
G. S. Henderson and Edw. L. Jones, coöperating	23 cases	
		262

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS.

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS		
		Minimum Per Cent Crude Fat	Minimum Per Cent Crude Protein	Maximum Per Cent Crude Fiber
CALF MEAL—				
Albers' Calf Meal	Albers Bros. Milling Co	5.05	22.00	7.00
Fisher's Calf Meal	Fisher Flouring Mills Co	4.00	20.00	5.00
Galbraith's Calf Meal	Galbraith & Co	6.00	16.00	7.00
Lilly's Calf Meal	The Chas. H. Lilly Co	5.00	24.00	5.00
Invicta Calf Meal	Randall & McLoughlin	4.50	20.00	8.00
Ryde's Cream Calf Meal	Ryde & Co	5.00	25.00	6.00
Blue Bag Calf Meal	Sears, Roebuck & Co	4.00	20.00	5.00
O.-K. Calf Meal	Vollmer Clearwater Co., Ltd	4.00	23.00	5.00
DAIRY FEED—				
Carnation	Albers Bros. Milling Co	4.00	14.00	10.00
Holstein	Albers Bros. Milling Co	2.00	10.00	*16.00
Dairy Feed 80s	Albers Bros. Milling Co	4.00	14.00	10.00
Milk-Flo	Albers Bros. Milling Co	5.00	17.00	10.00
Cow Feed—Lot 1	Bayview Milling Co	3.75	11.00	*18.00
Dairy Feed	James Brewer	6.00	12.50	*13.50
Purity	Coast Trading Co	4.00	14.00	8.00
Mormilk	Fisher Flouring Mills Co	4.00	15.00	*15.00
Dairy Feed	Fisher Flouring Mills Co	5.00	17.00	10.00
Dairy Feed	Galbraith & Co	7.39	20.00	10.00
Meadowbrook	W. F. Jahn & Co	6.00	10.00	*22.00
Dairy Feed	Kerr-Gifford & Co., Inc	4.50	16.00	9.00
A-1 Dairy Feed	Kenworthy Grain & Milling Co	5.00	14.00	10.00
But-er-fat	The Chas. H. Lilly Co	4.00	14.00	10.00
High Protein D. F.	The Chas. H. Lilly Co	5.00	17.00	10.00
Golden Dairy Feed	The Chas. H. Lilly Co	4.00	14.00	10.00
Dairy Ration	Pillsbury Flour Mills Co	....	....	....
Blue Bag	Sears, Roebuck & Co	4.00	13.00	8.00
Hammond's Best	Seattle Flour Mills	3.00	15.00	10.00
Sunnybrook	Sunnybrook Dairy Feed	1.50	12.00	8.50
Victory	Vollmer Clearwater Co., Ltd	2.69	8.02	*14.60
O. K. Cow Feed	Vollmer Clearwater Co., Ltd	4.27	12.50	9.90
Wemco Dairy Feed	Wenatchee Milling Co	4.00	17.00	10.00
Quality Dairy Feed	Wenatchee Produce Co	4.00	18.00	*12.00
Yakima Dairy Feed	Yakima Milling Co	5.28	15.80	9.82
DOG FEED—				
Husky Dog Feed	Albers Bros. Milling Co	5.00	14.00	8.00
Dog Feed	Fisher Flouring Mills Co	4.00	16.00	5.00
HOG FEED—				
Berkshire	Albers Bros. Milling Co	5.00	11.00	5.00
Molasses Hog Feed	Albers Bros. Milling Co	5.00	13.00	6.50
Dry Hog Feed	Albers Bros. Milling Co	5.00	14.00	8.00
Porko	Albers Bros. Milling Co	5.50	17.00	10.00
Swino	Albers Bros. Milling Co	5.00	13.00	6.50
Hog Feed	James Brewer	5.75	15.00	7.25
Morfat	Fisher Flouring Mills Co	5.00	13.00	7.00
Morpork	Fisher Flouring Mills Co	4.00	15.00	6.00
Hog Feed	Galbraith & Co	4.20	14.50	8.00
Hog Feed	W. F. Jahn & Co	7.00	10.00	*14.00
Pig Meal	The Chas. H. Lilly Co	5.00	24.00	5.00
Makemfat	The Chas. H. Lilly Co	4.00	15.00	*12.00
Berkshire Chop	Puyallup & Sumner F. G. C. Co.	3.00	18.00	8.00
Pig Meal	Sears, Roebuck & Co	4.00	14.00	8.00
Hog Feed	Sunnybrook Dairy Feed	2.50	12.00	7.50
Pig-a-Boo Digester Tankage	Swift & Co	6.00	60.00	2.50
O-K Hog Feed—5983	Vollmer Clearwater Co	4.09	12.09	9.90
Wemco Hog Feed	Wenatchee Milling Co	5.00	17.00	10.00
Quality Hog Feed	Wenatchee Produce Co	5.00	17.00	9.00

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS—Continued.

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS Minimum Per Cent Crude Fat	 Minimum Per Cent Crude Protein	 Maximum Per Cent Crude Fiber
HORSE FEED—				
Percheron	Albers Bros. Milling Co	8.00	10.00	10.00
LAMB MEAL—				
Lamb Meal	The Chas. H. Lilly Co	5.00	24.00	5.00
MILK FEEDS—				
Invicta Milk Mash	Randall-McLoughlin Co	4.50	20.00	8.00
Silver Quill Mash	Sears, Roebuck & Co	4.50	18.00	7.00
Buttermilk Starting Feed	The G. E. Conkey Co	3.00	12.00	4.00
Buttermilk, Meat and Grain Laying Mash	The G. E. Conkey Co	4.00	18.00	6.00
Buttermilk, Meat and Grain Growing Mash	The G. E. Conkey Co	4.00	18.00	5.00
Buttermilk Mash	Garden City Feed Mill	7.50	18.45	9.40
Buttermilk Mash	Fisher Flouring Mills	4.00	22.00	6.00
Milkoline (Buttermilk) Egg Mash	Golden Rod Milling Co	6.00	20.00	9.00
Milkoline (Buttermilk) Chick Mash	Golden Rod Milling Co	5.00	18.00	7.00
Buttermilk Mash	The Chas. H. Lilly Co	6.00	20.00	6.00
MILL FEED—				
Mill Run—Wheat	Diamond Flour Mills Co	8.00	12.00	10.00
Mill Run	Colton Flour Mills	2.80	14.25	8.20
Mill Run	The Chas. H. Lilly Co	8.00	18.00	12.00
Mill Feed—Wheat	Kennewick Flour Mills	2.00	10.00	12.00
Mill Run—Wheat	Pomeroy Flour Mills	8.00	18.00	10.00
Mill Run	Prosser Flour Mills	5.23	15.18	8.41
Mill Feed	Ritzville Flouring Mills	4.00	14.50	9.90
Mill Run—Wheat	R. P. Tjossem & Son	8.00	13.00	10.00
Mill Run	Touchet Milling Co	3.02	15.38	9.82
MIXED FEEDS—				
Ground Barley and Oats	Albers Bros. Milling Co	4.00	13.00	10.00
Barley and Oat By-Products	W. F. Jahn & Co	5.00	7.00	*24.00
Barley Chop "A"	Kerr-Gifford & Co	1.50	11.00	5.00
Ground Barley	Kerr-Gifford & Co	1.50	11.00	5.00
All Grain Chop	Albers Bros. Milling Co	4.00	8.00	10.00
Jersey Chop	Puyallup & Sumner F. G. C. Co.	3.00	17.00	*11.00
Hammond's Best All Grain Chop	Seattle Flour Mills	4.00	18.00	9.00
All Grain Chop	Sperry Flour Co	3.00	8.00	7.50
Wheat Mixed Feed 80s	Centennial Mills Co	3.00	13.00	10.00
Wheat Mixed Feed 80s	Colton Flour Mills	3.00	13.00	10.00
Wheat Mixed Feed 80s	Columbia River Milling Co	8.00	18.00	10.00
Wheat Mixed Feed 80s	Crown Mills	3.00	12.00	10.00
Wheat Mixed Feed 80s	Everett Flour Mill Co	8.00	12.00	10.00
Wheat Mixed Feed 80s	Harrington Milling Co	8.00	12.00	10.00
Wheat Mixed Feed 80s	Kalispel Flour Mill Co	4.00	16.00	10.00
Wheat Mixed Feed 80s	Kerr-Gifford & Co., Inc	3.00	12.00	10.00
Wheat Mixed Feed 80s	The Chas. H. Lilly Co	8.00	18.00	10.00
Wheat Mixed Feed 80s	Mabton Milling Co	3.00	13.00	10.00
Wheat Mixed Feed 80s	Northern Flour Mills Co	8.00	12.70	9.00
Wheat Mixed Feed 80s	Novelty Mill Co	8.00	13.00	10.00
Wheat Mixed Feed 80s	The Peacock Mill Co	3.00	12.00	10.00
Wheat Mixed Feed 80s	Portland Flouring Mills Co	3.00	12.00	10.00
Wheat Mixed Feed 80s	Puget Sound Flouring Mills Co.	3.00	12.00	10.00
Wheat Mixed Feed 80s	Preston-Shaffer Milling Co	3.00	12.00	10.00
Wheat Mixed Feed 80s	Ritzville Flouring Mills	3.00	18.00	10.00

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS—Continued.

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS Minimum Per Cent Crude Fat	GUARANTEED ANALYSIS Minimum Per Cent Crude Protein	GUARANTEED ANALYSIS Maximum Per Cent Crude Fiber
MIXED FEEDS (Concluded—				
Wheat Mixed Feed 80s	Royal Milling Co	3.00	16.00	10.00
Hammond's Best Mixed	Seattle Flour Mills	3.00	13.00	10.00
Wheat Mixed Feed 80s	Sperry Flour Co	3.00	13.00	10.00
Wheat Mixed Feed 80s	Spokane Flour Mills	3.00	13.00	10.00
Wheat Mixed Feed 80s	Sprague Roller Mills	3.00	13.00	10.00
Wheat Mixed Feed 80s	Superior Milling Co	3.00	13.00	10.00
Wheat Mixed Feed 80s	Tacoma Grain Co	3.00	13.00	10.00
Wheat Mixed Feed 80s	Vollmer Clearwater Co	3.00	13.00	10.00
Wheat Mixed Feed 80s	Wasco Warehouse Milling Co	3.00	13.00	10.00
Wheat Mixed Feed 80s	Wash. Grain & Milling Co	3.00	13.00	10.00
Wheat Mixed Feed 80s	Weiser Milling & Elevator Co	3.00	15.00	10.00
Wheat Mixed Feed 80s	Wenatchee Milling Co	3.00	13.00	10.00
Bran with Screenings	The Chas. H. Lilly Co	3.00	12.00	10.00
Middlings with Screenings	The Chas. H. Lilly Co	3.00	14.00	7.00
Shorts with Screenings	The Chas. H. Lilly Co	3.00	14.00	9.00
Bran and Shorts	Mabton Milling Co	3.00	14.00	9.00
Bran and Shorts	Miller Flour Mills	3.00	13.00	10.00
Bran and Shorts	Ellensburg Milling Co	3.25	14.00	10.00
Bran and Shorts	Pasco Flour Mills Co	2.00	12.00	10.00
Mash Mixture	W. F. Jahn & Co	7.00	10.00	10.00
MOLASSES FEEDS—				
Alfalfa Meal and Molasses	Albers Bros. Milling Co	2.00	8.00	*17.00
Albers' Molasses Feed	Albers Bros. Milling Co	4.00	14.00	10.00
Molas-O-Meal	Albers Bros. Milling Co	4.00	16.00	10.00
PIGEON FOOD—				
Goldenrod Pigeon Food	Golden Rod Milling Co	2.00	10.00	4.00
POULTRY FEEDS—				
Chick Feed	Albers Bros. Milling Co	2.50	11.00	3.00
Developing Chick Feed	Albers Bros. Milling Co	2.00	10.00	3.00
Central Star Chick Feed	Central Hay & Grain Co	3.50	14.00	5.50
Quality Chick Feed	Falls City Mill & Feed Co	4.00	15.00	8.00
Golden Rod Chick Feed	Golden Rod Milling Co	2.00	12.00	4.00
Clover Leaf Chick Feed	Inland Seed Co	....	....	....
A-1 Chick Feed	Kenworthy Grain & Milling Co	2.50	9.00	3.00
Shogo Chick Grits	Nebraska Corn Mills	1.00	7.00	2.00
Pu-L-Up Chick Feed	Puyallup & Sumner F. G. C. Co.	1.90	13.19	1.95
Royal Chick Feed	Rudy-Patrick Seed Co	3.00	10.00	8.00
Hammond's Best Chick Feed	Seattle Flour Mills	2.00	12.00	10.00
Wemco Chick Feed	Wenatchee Milling Co	4.00	11.00	8.00
Yakima Chick Feed	Yakima Milling Co	4.74	15.28	4.85
Progressive Chick Mash	Albers Bros. Milling Co	5.00	14.00	5.00
Purity Chick Mash	Coast Trading Co	4.00	15.00	7.00
Lilly's Chick Mash	The Chas. H. Lilly Co	4.00	14.00	7.00
Pu-L-Up Chick Mash	Puyallup & Sumner F. G. C. Co.	3.92	12.42	8.53
Chick Starter	Albers Bros. Milling Co	3.00	8.00	3.00
Chick Starter Milk Mash	Fisher Flouring Mills Co	4.00	15.00	6.00
Chick Starter	Fisher Flouring Mills Co	2.00	10.00	4.00
Developing Mash	Albers Bros. Milling Co	5.00	14.00	5.00
Developing Mash	Fisher Flouring Mills Co	4.50	14.00	4.50
Developing Mash	Galbraith & Co	3.18	13.79	8.24
Developing Food	Golden Rod Milling Co	2.00	8.00	4.00
Chick Developer	Puyallup & Sumner F. G. C. Co.	4.92	11.42	1.99
Chick Developer	Kerr-Gifford & Co., Inc	4.50	14.00	5.00
Growing Food	Fisher Flouring Mills Co	2.00	10.00	4.00

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS—Continued.

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS		
		Minimum Per Cent Crude Fat	Minimum Per Cent Crude Protein	Maximum Per Cent Crude Fiber
POULTRY FEEDS (Concluded)—				
A-1 Growing Mash	Globe Grain & Milling Co	4.00	16.00	5.00
Growing Mash	Golden Rod Milling Co	5.00	18.00	8.00
Growing Mash	The Chas. H. Lilly Co	4.00	15.00	6.00
Wemco Growing Food	Wenatchee Milling Co	4.00	11.00	8.00
Quality Growing Food	Wenatchee Produce Co	4.00	16.00	10.00
Fattening Mash	Fisher Flouring Mills Co	5.00	14.00	5.00
Fattening Mash	Golden Rod Milling Co	5.00	10.00	8.00
Fattening Mash	Kerr-Gifford & Co., Inc	5.00	14.00	6.00
Fattening Food	The Chas. H. Lilly Co	4.00	15.00	7.00
Progressive Egg Maker	Albers Bros. Milling Co	5.00	20.00	8.00
Egg Mash	James Brewer	5.50	20.00	7.00
Laying Mash	James Brewer	6.50	23.50	8.50
Egg Producer	Fisher Flouring Mills Co	5.00	20.00	7.00
Laymor	Fisher Flouring Mills Co	5.00	20.00	7.50
Egg Mash	Galbraith & Co	5.88	18.90	8.17
A-1 Laying Mash	Globe Grain & Milling Co	5.00	16.00	9.00
Goldenrod Egg Mash	Golden Rod Milling Co	5.00	18.00	8.00
Egg Producer	Kenworthy Grain & Milling Co.	4.03	17.17	6.40
Egg Producer	Kerr-Gifford & Co., Inc	5.00	21.00	8.50
Standard Egg Producer	Lehman Bros.—City Mills	6.00	15.00	8.00
Golden Egg Mash	The Chas. H. Lilly Co	4.00	16.00	10.00
Lilly's Egg Mash	The Chas. H. Lilly Co	5.00	19.00	7.00
Pu-L-Up Egg Mash	Puyallup & Sumner F. G. C. Co.	6.55	18.99	9.62
Purity Egg Mash	Coast Trading Co	5.00	20.00	7.00
Silver Quill Egg Mash	Sears, Roebuck & Co	5.00	20.00	8.00
Silver Quill Laying Mash	Sears, Roebuck & Co	5.00	20.00	8.00
Wemco Egg Mash	Wenatchee Milling Co	4.00	18.00	10.00
Quality Egg Mash	Wenatchee Produce Co	3.85	14.80	8.60
Mash Food	Kenworthy Grain & Milling Co.	4.10	14.00	9.90
O-K Mash Food	Vollmer Clearwater Co., Ltd.	4.09	14.07	9.90
White's Mash	White Feed Co	....	....	....
Moulting Mash	The Chas. H. Lilly & Co	7.50	26.00	6.00
Poultry Food Mash	F. J. Farley	7.36	22.18	9.38
Wemco Poultry Mash	Wenatchee Milling Co	4.00	17.00	9.00
Yakima Poultry Mash	Yakima Milling Co	7.20	21.88	7.52
Poultryman Special	Albers Bros. Milling Co	8.50	10.00	3.00
Cloverleaf Forcing Feed	The Inland Seed Co	....	....	....
Meat Scrap	E.Rauh & Sons—Animal Feed Co.	6.00	40.00	4.00
Meat Scrap—Eggmore	Swift & Co	8.00	50.00	4.00
Meat Meal—Eggmore	Swift & Co	8.00	50.00	4.50
Blood Meal	Swift & Co	.50	87.00	1.00
Poultry Bone	Swift & Co	5.00	25.00	1.50
Scratch Feed	Albers Bros. Milling Co	3.50	10.00	5.00
Quality Scratch	Falls City Mill & Feed Co	4.00	15.00	8.00
Golden Rod Scratch	Golden Rod Milling Co	2.00	7.00	4.00
Economy Scratch	Golden Rod Milling Co	2.00	8.00	6.00
Clover Leaf Scratch	Inland Seed Co	....	....	....
Kerr's Scratch	Kerr-Gifford & Co., Inc	3.00	12.00	10.00
Kerr's Developing Scratch	Kerr-Gifford & Co., Inc	2.00	10.00	4.50
Kerr's Albina Scratch	Kerr-Gifford & Co., Inc	2.50	9.00	5.00
Rubicomb Scratch	Neil Bros. Grain Co	....	....	....
Pu-L-Up Scratch	Puyallup & Sumner F. G. C. Co.	4.36	11.90	4.09
Royal Scratch	Rudy-Patrick Seed Co	2.50	10.00	3.00
Hammond's Best Scratch	Seattle Flour Mills	3.00	15.00	5.00

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS—Continued.

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS Minimum Per Cent Crude Fat	 Minimum Per Cent Crude Protein	 Maximum Per Cent Crude Fiber
RABBIT FEED—				
Rabbit Feed	Fisher Flouring Mills Co	4.00	17.00	10.00
STOCK FEED—				
Stock Feed	Albers Bros. Milling Co	5.50	15.00	10.00
Stock Food	Sperry Flour Co	2.00	8.00	6.00
WHEAT BRAN—				
Wheat Bran	Centennial Mill Co	3.00	12.00	10.00
Wheat Bran	Crown Mills	3.00	12.00	10.00
Wheat Bran	Diamond Flour Mills Co	3.00	12.00	10.00
Wheat Bran	Ellensburg Milling Co	3.00	13.00	12.00
Wheat Bran	Everett Flour Mill Co	3.00	12.00	10.00
Wheat Bran	Harrington Milling Co	3.00	12.00	10.00
Wheat Bran	Fisher Flouring Mills Co	3.00	12.00	10.00
Wheat Bran	Kalispell Flour Mill Co	3.00	15.00	10.00
Wheat Bran	Kennewick Flour Mills	2.00	10.00	12.00
Wheat Bran	F. M. Martin Grain & Mill Co	3.00	12.00	10.00
Wheat Bran	Miller Flour Mills	3.00	12.00	10.00
Wheat Bran	Northern Flour Mills Co	3.00	12.00	10.00
Wheat Bran	Pasco Flour Mills Co	2.00	12.00	10.00
Wheat Bran	Peacock Mill Co	3.00	12.00	10.00
Wheat Bran	Portland Flouring Mills Co	3.00	12.00	10.00
Wheat Bran	Preston-Shaffer Milling Co	3.00	12.00	10.00
Wheat Bran	Prosser Flour Mills	4.51	14.00	11.10
Wheat Bran	Royal Milling Co	3.00	15.00	10.00
Wheat Bran	Seattle Flour Mills	3.00	12.00	12.00
Wheat Bran	Sprague Roller Mills	3.00	12.00	10.00
Wheat Bran	Superior Milling Co	3.00	12.00	10.00
Wheat Bran	R. P. Tjossem & Son	2.50	12.00	*14.00
Wheat Bran	Wasco Warehouse Milling Co	3.00	12.00	10.00
Wheat Bran	Washington Grain & Milling Co.	3.00	12.00	10.00
Wheat Bran	Wenatchee Milling Co	3.00	12.00	10.00
LOW GRADE FLOUR—				
Low Grade Flour	Crown Mills	3.00	14.00	1.00
"Red Dog" Flour	Fisher Bros. Milling Co	3.00	15.00	5.00
"Red Dog" Flour	Portland Flouring Mills Co	3.00	15.00	5.00
WHEAT MIDDLINGS—				
Wheat Middlings	Colton Flour Mills	3.00	14.00	7.00
Wheat Middlings	Crown Mills	3.00	14.00	7.00
Wheat Middlings	Diamond Flour Mills Co	3.00	14.00	7.00
Wheat Middlings	Everett Flour Mills Co	3.00	14.00	7.00
Wheat Middlings—Special	Fisher Flouring Mills Co	3.00	14.00	7.00
Wheat Middlings	Harrington Milling Co	3.00	14.00	7.00
Wheat Middlings—Standard	Kalispell Flour Mill Co	4.00	16.50	7.50
Wheat Middlings	Kennewick Flour Mills	3.00	12.00	11.00
Wheat Middlings	Kerr-Gifford Co., Inc	3.00	14.00	7.00
Wheat Middlings	F. M. Martin Grain & Mill. Co.	3.00	14.00	7.00
Wheat Middlings	Mabton Milling Co	3.00	14.00	7.00
Wheat Middlings	Miller Flour Mills	3.00	14.00	7.00
Wheat Middlings	Northern Flour Mills Co	3.00	13.50	7.50
Wheat Middlings	Novelty Mill Co	3.00	14.00	7.00
Wheat Middlings	Pasco Flour Mills Co	2.50	12.00	8.00
Wheat Middlings	Peacock Mill Co	3.00	14.00	7.00
Wheat Middlings	Portland Flour Mills Co	3.00	14.00	7.00
Wheat Middlings	Preston-Shaffer Milling Co	3.00	14.00	7.00

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS—Continued.

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS Minimum Per Cent Crude Fat	 Minimum Per Cent Crude Protein	 Maximum Per Cent Crude Fiber
WHEAT MIDDLINGS (Concluded)—				
Wheat Middlings	Prosser Flour Mills	3.82	14.44	8.50
Wheat Middlings—Standard	Royal Milling Co	4.00	16.50	7.50
Wheat Middlings	Seattle Flour Mills	3.00	14.00	7.00
Wheat Middlings	Spokane Flour Mills	3.00	14.00	7.00
Wheat Middlings	Superior Milling Co	3.00	14.00	7.00
Wheat Middlings	Touchet Milling Co	4.56	16.62	5.85
Wheat Middlings	Wasco Warehouse Milling Co	3.00	14.00	7.00
WHEAT SHORTS—				
Wheat Shorts	Centennial Mill Co	3.00	14.00	9.00
Wheat Shorts	Crown Mills	3.00	14.00	9.00
Wheat Shorts	Diamond Flour Mills Co	3.00	14.00	7.00
Wheat Shorts	Ellensburg Milling Co	3.20	16.25	8.25
Wheat Shorts	Everett Flour Mill Co	3.00	14.00	9.00
Wheat Shorts	Fisher Flouring Mills	3.00	14.00	9.00
Wheat Shorts	Harrington Milling Co	3.00	14.00	9.00
Wheat Shorts	Kennewick Flour Mills	2.00	10.00	12.00
Wheat Shorts	F. M. Martin Grain & Mill. Co.	3.00	14.00	9.00
Wheat Shorts	Miller Flour Mills	3.00	14.00	9.00
Wheat Shorts	Northern Flour Mills Co	3.00	13.50	8.50
Wheat Shorts	Pasco Flour Mills Co	2.00	12.00	10.00
Wheat Shorts	Peacock Mill Co	3.00	14.00	9.00
Wheat Shorts	Portland Flouring Mills Co	3.00	14.00	9.00
Wheat Shorts	Preston-Shaffer Milling Co	3.00	14.00	9.00
Wheat Shorts	Prosser Flour Mills	5.25	15.69	7.19
Wheat Shorts	Seattle Flour Mills	3.00	14.00	9.00
Wheat Shorts	Sprague Roller Mills	3.00	14.00	9.00
Wheat Shorts	Superior Milling Co	3.00	14.00	9.00
Wheat Shorts	R. P. Tjossem & Son	3.00	14.00	10.00
Wheat Shorts	Wasco Warehouse Milling Co	3.00	14.00	9.00
Wheat Shorts	Washington Grain & Milling Co.	3.00	14.00	9.00
Wheat Shorts	Wenatchee Milling Co	3.00	14.00	10.00
MISCELLANEOUS—				
Dried Grains	The Fleischmann Co	3.00	12.00	21.00
Clover Leaf Balanced Ration	The Inland Seed Co	3.00	10.00	10.00
Corn Chop (Shogo)	Nebraska Corn Mills	2.50	7.00	4.00
Hominy Feed (Nebco)	Nebraska Corn Mills	7.00	11.00	6.50
Kaola Meal	The Palmolive Co	7.18	16.30	5.00
Cocoanut Cake Meal	Stanwood Grain Co	16.25	17.75	8.00

* Indicates registrations made during the period in which the injunction was in force prohibiting the Department from enforcing the 10 per cent fiber clause of the Feeding Stuffs Law.

REGISTERED FERTILIZERS.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent.)			ANALYTICAL FEES	
	1919	1920		1919	1920
AMERICAN MINERALS PRODUCING CO., Tacoma, Wash.					
Liberty Mineral Fertilizer	....	....	Not a fertilizer.		
AMERICAN PACIFIC WHALING CO., Bay City Wash.					
Bone Meal	4.48	4.48	Nitrogen in ammonia.		
	3.65	3.65	Nitrogen total.		
	8.67	8.67	Phosphoric acid, soluble.		
	8.67	8.67	Phosphoric acid, reverted.		
	15.12	15.12	Phosphoric acid, insoluble.		
	23.79	23.79	Phosphoric acid total.		
			Three ingredients	$12 00	$12 00
Meat and Blood Fertilizer	13.44	....	Nitrogen in ammonia.		
	11.06	....	Nitrogen total.		
	1.19	....	Phosphoric acid.		
			Two ingredients	12 00	....
Whale Guano	....	13.70	Nitrogen in ammonia.		
	....	11.28	Nitrogen total.		
			One ingredient	....	6 00
ARMOUR & COMPANY, Spokane, Wash.					
Blood Meal, 1919	13.06	12.80	Nitrogen total.		
Dried Blood, 1920			One ingredient	6 00	6 00
Bone Meal, 1919	4.43	4.10	Nitrogen total.		
Raw Bone Meal, 1920	22.75	24.02	Phosphoric acid.		
	....	54.60	Phosphate of lime.		
			Two ingredients	12 00	12 00
Tankage, 1919	6.89	7.40	Nitrogen total.		
Ground Tankage, 1920	6.34	8.90	Phosphoric acid.		
	....	19.40	Phosphate of lime (bone).		
			Two ingredients	12 00	12 00
Sheep Manure	....	3.30	Nitrogen total.		
	....	1.92	Phosphoric acid, soluble.		
	....	.33	Phosphoric acid, insoluble.		
	....	2.35	Phosphoric acid total.		
	....	3.44	Potash, soluble.		
			Three ingredients	....	18 00
BARTON & COMPANY, Seattle, Wash.					
Sheep Guano	2.18	....	Nitrogen total.		
	1.61	....	Phosphoric acid.		
	2.91	....	Potash.		
			Three ingredients	$18 00	....
Barton's Bone Meal	....	4.00	Nitrogen total.		
	....	21.00	Phosphoric acid total.		
			Two ingredients	12 00	....
S. BLACHLEY, Spokane, Wash.					
Twin Buck Brand Sheep Guano	2.25	1.75	Nitrogen total.		
	2.05	1.75	Phosphoric acid.		
			Two ingredients	12 00	12 00

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent.)			ANALYTICAL FEES	
	1919	1920		1919	1920
Beaver Brand Sheep Guano and Bones	2.00	....	Nitrogen in nitrates.		
	7.00	....	Phosphoric acid, soluble.		
			Two ingredients	12 00	....
CARSTENS PACKING CO., Tacoma, Wash.					
Bone Meal	3-4.00	3-4.00	Nitrogen in ammonia.		
	20-23.00	20-23.00	Phosphoric acid total.		
			Two ingredients	12 00	12 00
Dried Blood	12-14.00	12-14.00	Nitrogen in ammonia.		
			One ingredient	6 00	6 00
Sheep Guano	2-3.00	2-3.00	Nitrogen in ammonia.		
			One ingredient	6 00	6 00
Tankage	6½-7½	6½-7½	Nitrogen in ammonia.		
	9-10.00	9-10.00	Phosphoric acid total.		
			Two ingredients	12 00	12 00
Ground Blood, 1919 } Dried Blood, 1920 }	15.00	12.00	Nitrogen in ammonia.		
			One ingredient	6 00	6 00
Ground Tankage, 1919 }	7.50	8.00	Nitrogen in ammonia.		
Dry Tankage, 1920 }	11.50	....	Phosphoric acid.		
			Two ingredients	12 00	6 00
COLUMBIA & OKANOGAN NURSERY CO.. INC., Wenatchee, Wash.					
Sheep Guano	2.02	....	Nitrogen in ammonia.		
	1.66	....	Nitrogen total.		
	.93	....	Phosphoric acid.		
	3.30	....	Potash.		
			Three ingredients	18 00	....
M. FURUYA CO., Seattle, Wash.					
Fish Meal	9.86	....	Nitrogen in ammonia.		
	8.13	....	Nitrogen total.		
	2.77	....	Phosphoric acid total.		
			Two ingredients	12 00	....
JAMES HENRY, Seattle, Wash.					
Dry Blood	16.00	16.00	Nitrogen in ammonia.		
			One ingredient	6 00	6 00
Tankage	5.40	6.60	Nitrogen in ammonia.		
	36.00	31.10	Phosphoric acid total, bone.		
			Two ingredients	12 00	12 00
CHAS. H. LILLY & CO., Seattle, Wash.					
Lilly's Lawn Dressing	4.00	....	Nitrogen total.		
	9.00	....	Phosphoric acid, reverted.		
			Two ingredients	$12 00	....
Lilly's Potato Fertilizer	3.00	....	Nitrogen total.		
	10.00	....	Phosphoric acid, reverted.		
			Two ingredients	12 00	....
Lilly's Fruit and Vegetable Fertilizer	4.00	....	Nitrogen total.		
	10.00	....	Phosphoric acid, reverted.		
			Two ingredients	12 00	....

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent.)			ANALYTICAL FEES	
	1919	1920		1919	1920
"Morcrop"	2.00	2.00	Nitrogen total.		
	10.00	10.00	Phosphoric acid.		
	2.00	2.00	Potash, soluble.		
			Three ingredients	18 00	18 00
Nitrate of Soda	13.00	13.00	Nitrogen total.		
			One ingredient	6 00	6 00
Superphosphate	17.00	17.00	Phosphoric acid, reverted.		
			One ingredient	6 00	6 00
Blood and Bone	3.00	3.00	Nitrogen total.		
	7.00	7.00	Phosphoric acid, reverted.		
	11.00	11.00	Phosphoric acid, insoluble.		
	18.00	18.00	Phosphoric acid total.		
			Two ingredients	12 00	12 00
Bone Meal	2-3.00	2-3.00	Nitrogen.		
	18-22.00	18-22.00	Phosphoric acid, reverted.		
			Two ingredients	12 00	12 00
MARINE PRODUCTS CO., Tacoma, Wash.					
Potash Ash	3.00	....	Potash, soluble.		
			One ingredient	6 00	....
No. 1 Tankage, 1919 Marproco No. 1, 1920	4.00	3.00	Nitrogen in ammonia.		
	16.00	8.00	Phosphoric acid.		
	....	5.00	Phosphoric acid, insoluble.		
	....	13.00	Phosphoric acid total.		
			Two ingredients	12 00	12 00
"Sakana" Fish Fertilizer	3.50	6.00	Nitrogen in ammonia.		
	4.00	5.00	Phosphoric acid, reverted.		
	.36	8.00	Phosphoric acid, insoluble.		
	1.50	16.00	Potash in water, total.		
			Three and two ingredients	18 00	12 00
Ground Sheep Manure	1.50	2.00	Nitrogen in ammonia.		
	1.00	1.00	Phosphoric acid, soluble.		
	1.50	2.00	Potash.		
			Three ingredients	18 00	18 00
Bone Meal	2½	....	Nitrogen total.		
	17.00	....	Phosphoric acid.		
			Two ingredients	12 00	....
Pu-L-Up Brand, 1919 Berry Special, 1920	2.00	2.00	Nitrogen total.		
	5.00	5.00	Phosphoric acid, reverted.		
	5.00	5.00	Phosphoric acid, insoluble.		
	1.00	2.00	Potash, soluble.		
			Three ingredients	18 00	18 00
"Marproco"	8- 9.00	....	Nitrogen total.		
	8-10.00	....	Phosphoric acid.		
			Two ingredients	12 00	....
"Kaufman's Wilgrow"	7.00	....	Nitrogen total.		
	12.00	....	Phosphoric acid total.		
	6.00	....	Potash, soluble.		
			Three ingredients	$18 00	....
Marproco Brand Tomato Special	....	3.00	Nitrogen total.		
	....	4.00	Phosphoric acid, soluble.		
	....	4.00	Phosphoric acid, reverted.		
	....	8.00	Phosphoric acid total.		
	....	6.00	Potash, soluble.		
			Three ingredients	....	18 00

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent.)			ANALYTICAL FEES	
	1919	1920		1919	1920
Clarke's Special Wenatchee Orchard Dressing Fertilizer..	....	6.00	Nitrogen total.		
	....	5.00	Phosphoric acid, reverted.		
	....	5.00	Phosphoric acid, insoluble.		
	....	10.00	Phosphoric acid total.		
	....	4.00	Potash, soluble.		
			Three ingredients...........	....	18 00
Lebo's Chemical Special Fertilizer	....	2.00	Nitrogen in nitrates.		
	....	10.00	Phosphoric acid, soluble.		
	....	2.00	Potash, soluble.		
			Three ingredients...........	....	18 00
Marproco Brand Potato Special	....	2.00	Nitrogen total.		
	....	5.00	Phosphoric acid, reverted.		
	....	5.00	Phosphoric acid, insoluble.		
	....	10.00	Phosphoric acid total.		
	....	4.00	Potash, soluble.		
			Three ingredients...........	....	18 00
Whale Meat, Blood and Bone Fertilizer	....	6.00	Nitrogen total.		
	....	8.00	Phosphoric acid, reverted.		
	....	8.00	Phosphoric acid, insoluble.		
	....	16.00	Phosphoric acid total.		
			Two ingredients............	....	12 00
Whale Bone Meal............	....	3.00	Nitrogen total.		
	....	18.00	Phosphoric acid, reverted.		
	....	12.00	Phosphoric acid, insoluble.		
			Two ingredients............	....	12 00
Animal Bone Meal............	....	2½	Nitrogen total.		
	....	12.00	Phosphoric acid, reverted.		
	....	12.00	Phosphoric acid, insoluble.		
			Two ingredients.............	12 00	....
Kelp Char Potash............	....	8.00	Potash. soluble, in water.		
			One ingredient..............	....	6 00
THE MOUNTAIN COPPER CO., **San Francisco, Cal.**					
"Mococo" Superphosphate....	16.50	16.50	Phosphoric acid, soluble.		
	1.00	1.00	Phosphoric acid, reverted.		
	.50	.50	Phosphoric acid, insoluble.		
	18.00	18.00	Phosphoric acid total.		
			One ingredient...............	6 00	6 00
NITRATE AGENCIES CO., **Seattle, Wash.**					
Nitrate of Soda................	15.00	15.00	Nitrogen total.		
			One ingredient...............	6 00	6 00
PACIFIC GUANO AND FERTILIZER CO., San Francisco, Cal.					
"Gromore"	6.00	6.00	Nitrogen in nitrates.		
	9-10.00	9-10.00	Phosphoric acid, soluble.		
	5.00	5.00	Potash.		
			Three ingredients............	$18 00	$18 00
PACIFIC PRODUCTS CO., **Seattle, Wash.**					

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent.)			ANALYTICAL FEES	
	1919	1920		1919	1920
P. P. Co.	10.10	....	Nitrogen in ammonia.		
	10.10	....	Nitrogen total.		
	4.00	....	Phosphoric acid, soluble.		
	3.00	....	Phosphoric acid, insoluble.		
	7.00	....	Phosphoric acid total.		
			Two ingredients	12 00	....
PORTLAND SEED CO., **Portland, Ore.**					
Bone Meal	4.00	4.00	Nitrogen total.		
	20.00	20.00	Phosphoric acid.		
			Two ingredients	12 00	12 00
General or Vegetable Fertilizer	2.86	2.65	Nitrogen total.		
	3.93	3.88	Phosphoric acid, soluble.		
	3.25	2.95	Phosphoric acid, reverted.		
	3.00	3.73	Phosphoric acid, insoluble.		
	10.18	10.56	Phosphoric acid total.		
			Two ingredients	12 00	12 00
Nitrate of Soda	15.00	....	Nitrogen in nitrates.		
			One ingredient	....	6 00
Lawn and Rose	3.25	3.35	Nitrogen total.		
	9.82	10.19	Phosphoric acid total.		
			Two ingredients	12 00	12 00
Diamond Plant Food	5.00	5.16	Nitrogen total.		
	10.00	8.10	Phosphoric acid total.		
	9.00	10.83	Potash, soluble.		
			Three ingredients	18 00	18 00
Superphosphate	....	18.00	Phosphoric acid, soluble.		
			One ingredient	....	6 00
PUGET SOUND POTASH AND KELP FERTILIZER CO., **Seattle, Wash.**					
Dried Kelp	1.75	....	Nitrogen in nitrates.		
	.40	....	Phosphoric acid total.		
	18.87	....	Potash, soluble.		
	20.35	....	Chlorine.		
			Three ingredients	18 00	....
RANDALL & McLOUGHLIN, **Seattle, Wash.**					
Invicta Fertilizer	....	2.00	Nitrogen total.		
	....	5.00	Phosphoric acid, soluble.		
	....	5.00	Phosphoric acid, insoluble.		
	....	2.00	Potash.		
			Three ingredients	....	18 00
ROBINSON FISHERIES, **Anacortes, Wash.**					
"Rofico" Brand Fish Meal	9.00	10.90	Nitrogen.		
	7½	7.79	Phosphoric acid.		
			Two ingredients	12 00	12 00
SEA PRODUCTS CO., **Everett, Wash.**					
Grass and Rose Food	5-6.00	....	Nitrogen total.		
	2-3.00	....	Phosphoric acid.		
			Two ingredients	$12 00	....

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent.)			ANALYTICAL FEES	
	1919	1920		1919	1920
Plant Food (registered but not marketed)................	4-6.00	....	Nitrogen total.		
	1-3.00	....	Phosphoric acid total.		
			Two ingredients..................	....	....
Fish Meal......................	....	9.06	Nitrogen total.		
	....	6.55	Phosphoric acid total.		
			Two ingredients..............	....	12 00
SEATTLE DRYING CO., INC., Seattle, Wash.					
Poultry Guano................	4.70	....	Nitrogen in ammonia.		
	3.87	....	Nitrogen total.		
	6.10	....	Phosphoric acid total.		
	.87	....	Potash, soluble.		
			Three ingredients............	18 00	....
STANDARD CHEMICAL CO., Tacoma, Wash.					
Winner Brand Sheep Manure..	1.50	....	Nitrogen in nitrates.		
	1.00	....	Phosphoric acid, soluble.		
	2-3.00	....	Potash.		
			Three ingredients............	18 00	....
Winner Brand Grain and Berry Fertilizer..............	1.00	....	Nitrogen in nitrates.		
	9.00	....	Phosphoric acid, soluble.		
	1.50	....	Potash.		
			Three ingredients............	18 00	....
Winner Brand Fertilizer "X"..	2.00	....	Nitrogen in nitrates.		
	6.00	....	Phosphoric acid.		
	2.50	....	Potash.		
			Three ingredients............	18 00	18 00
Winner Brand 2-10-2...........	....	2.00	Nitrogen in nitrates.		
	....	10.00	Phosphoric acid, soluble.		
	....	2.00	Potash, soluble.		
			Three ingredients............	18 00	....
Winner Brand 1-10-3...........	....	1.00	Nitrogen in nitrates.		
	....	10.00	Phosphoric acid, soluble.		
	....	3.00	Potash, soluble.		
			Three ingredients............	....	18 00
UNION MEAT CO.—1919—North Portland, Ore. **SWIFT & CO.—1920—North Portland, Ore.**					
Beaver Brand "B".............	1.64	1.65	Nitrogen total.		
	13.14	13.50	Phosphoric acid total.		
	3.00	3.00	Potash, soluble.		
			Three ingredients............	18 00	18 00
Beaver Brand "A" Special....	3.29	3.29	Nitrogen in ammonia.		
	10.52	12.25	Phosphoric acid total.		
	2.00	2.00	Potash, soluble.		
			Three ingredients............	18 00	18 00
Beaver Brand "A".............	....	2.47	Nitrogen total.		
	....	12.75	Phosphoric acid total.		
	....	3.00	Potash total.		
			Three ingredients............	....	18 00
Beaver Brand "C".............	2.46	2.47	Nitrogen in ammonia.		
	11.22	11.75	Phosphoric acid total.		
	4.50	4.00	Potash, soluble.		
			Three ingredients............	$18 00	$18 00

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent.)			ANALYTICAL FEES	
	1919	1920		1919	1920
Beaver Brand "M"	2.47	2.47	Nitrogen in ammonia.		
	12.00	13.75	Phosphoric acid total.		
	1.00	1.00	Potash.		
			Three ingredients	18 00	18 00
Beaver Brand "O"	8.22	2.05	Nitrogen in nitrates.		
	9.52	11.50	Phosphoric acid total.		
	2.25	2.25	Potash, soluble.		
			Three ingredients	18 00	18 00
Beaver Brand Hop Dressing	8.22	9.14	Nitrogen in nitrates.		
	14.80	14.75	Phosphoric acid total.		
			Two ingredients	12 00	12 00
Beaver Brand Orchard Dressing	12.34	10.70	Nitrogen total.		
	6.50	9.00	Phosphoric acid total.		
			Two ingredients	12 00	12 00
"Roselawn"	6.29	....	Nitrogen in ammonia.		
	18.82	....	Phosphoric acid total.		
			Two ingredients	12 00	....
No. 5 Tankage, 1919 Swift's Beaver, 1920 Brand No. 5 Tankage	4.11	4.10	Nitrogen in ammonia.		
	16.48	18.00	Phosphoric acid total.		
			Two ingredients	12 00	12 00
Blood Meal, Swift's Blood Meal	13.58	13.57	Nitrogen in ammonia.		
			One ingredient	6 00	6 00
Raw Bone Meal, Swift's Raw Bone Meal	3.50	3.50	Nitrogen in ammonia.		
	24.00	24.00	Phosphoric acid total.		
			Two ingredients	12 00	12 00
Steam Bone Meal, Swift's Steam Bone Meal	2.47	2.28	Nitrogen in ammonia.		
	25.64	28.00	Phosphoric acid total.		
			Two ingredients	12 00	12 00
Nitrate of Soda	15.24	15.21	Nitrogen in nitrates.		
			One ingredient	6 00	6 00
Superphosphate, Swift's Acid Phosphate	17.25	18.25	Phosphoric acid total.		
			One ingredient	6 00	6 00
Potash Ash	4.50	....	Potash, soluble.		
			One ingredient	6 00	....
Beaver Brand "D"	....	8.29	Nitrogen total.		
	....	9.10	Phosphoric acid total.		
	....	6.00	Potash, soluble.		
			Three ingredients	....	18 00
Beaver Brand "E"	....	2.47	Nitrogen in nitrates.		
	....	10.50	Phosphoric acid total.		
	....	10.00	Potash, soluble.		
			Three ingredients	....	18 00
TACOMA LIME PRODUCTS AND FERTILIZER CO., Tacoma, Wash.					
"Kewite"	1.00	....	Nitrogen in nitrates.		
			One ingredient	6 00	....

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent.)			ANALYTICAL FEES	
	1919	1920		1919	1920
UNITED STATES WHALING CO., **Port Armstrong, Baranoff Is., S. E. Alaska.**					
BALFOUR GUTHRIE CO., **Seattle, Wash., Agents.**					
Meat and Bone	5.81	....	Nitrogen in nitrates.		
	7.06	....	Nitrogen in ammonia.		
	16.20	....	Phosphoric Acid, P2 O5.		
	35.35	....	Phosphoric Acid, Ca3 (PO4).		
			Two ingredients	12 00	....
Bone and Meal	2.94	....	Nitrogen in nitrates.		
	8.57	....	Nitrogen in ammonia.		
	25.45	....	Phosphoric Acid, P2 O5.		
	55.10	....	Phosphoric Acid, Ca3 (PO4).		
			Two ingredients	12 00	....
WALLA WALLA MEAT AND COLD STORAGE CO., **Walla Walla, Wash.**					
Ground Tankage	5.00	5.00	Nitrogen total.		
	8.00	5.00	Phosphoric acid.		
			Two ingredients	12 00	12 00
Dried Blood	12.00	12.00	Nitrogen in nitrates.		
	15.00	15.00	Nitrogen in ammonia.		
			One ingredient	6 00	6 00
Bone Meal	....	....	Nitrogen total.		
	....	....	Phosphoric acid.		
			Two ingredients	....	12 00
WESTERN FERTILIZER CO., **San Francisco, Cal.**					
"Wizard" Fertilizer	6.00	6.00	Nitrogen in nitrates.		
	9-10.00	9-10.00	Phosphoric acid, soluble.		
	5.00	5.00	Potash, soluble.		
			Three ingredients	18 00	18 00
WOODRUFF-BOYCE SEED CO., **Seattle, Wash.**					
"Superior"	3.47	....	Nitrogen in nitrates.		
	4.08	....	Nitrogen in ammonia.		
	9.91	....	Phosphoric acid total.		
			Two ingredients	12 00	....
"Superior" Vegetable and Garden Fertilizer	....	2.00	Nitrogen.		
	....	8.00	Phosphoric acid.		
	....	2.00	Potash, soluble.		
			Three ingredients	....	18 00
"Superior" Lawn and Garden Fertilizer	....	2.50	Nitrogen.		
	....	10.00	Phosphoric acid.		
	....	4.00	Potash, soluble.		
			Three ingredients	....	18 00
WASHINGTON FERTILIZER CO., INC., Seattle, Wash.					
Chicken Guano and Fish Meal	....	5.00	Nitrogen in ammonia.		
	....	8.00	Phosphoric acid.		
			Two ingredients	....	12 00

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent.)			ANALYTICAL FEES	
	1919	1920		1919	1920
COLUMBIA & OKANOGAN NURSERY CO., INC., Wenatchee, Wash.					
Sheep Manure	....	2.41	Nitrogen.		
	....	.98	Phosphoric acid total.		
	....	2.24	Potash, soluble.		
			Three ingredients	....	$18 00
Totals or 1919 and 1920				$882 00	$888 00

Total for biennium........................$1,770 00

Number of firms registered....29				
Number of brands registred...96				
Number of ingredients, 1919—147@$6 00			$882 00	
Number of ingredients, 1920—148@$6 00				$888 00
American Pacific Whaling Co	Tacoma, Wash	$24 00	$18 00	
Armour & Co	Spokane, Wash	30 00	48 00	
Barton & Co	Seattle, Wash	18 00	12 00	
S. Blachley	Spokane, Wash	24 00	12 00	
Carstens Packing Co	Tacoma, Wash	36 00	36 00	
Carstens Packing Co	Spokane, Wash	18 00	12 00	
Columbia & Okanogan Nursery	Wenatchee, Wash	18 00	18 00	
M. Furuya Co	Seattle, Wash	12 00	....	
James Henry	Seattle, Wash	18 00	18 00	
Chas. H. Lilly Co	Seattle, Wash	90 00	54 00	
Marine Products Co	Tacoma, Wash	114 00	174 00	
The Mountain Copper Co	San Francisco, Cal	6 00	6 00	
Nitrate Agencies Co	Seattle, Wash	6 00	6 00	
Pacific Guano and Fertilizer Co	San Francisco, Cal	18 00	18 00	
Pacific Products Co	Seattle, Wash	12 00	....	
Portland Seed Co	Portland, Ore	60 00	60 00	
Puget Sound Potash and Kelp Fertilizer Co.	Seattle, Wash	18 00	....	
Randall & McLoughlin	Seattle, Wash	....	18 00	
Robinson Fisheries	Anacortes, Wash	12 00	12 00	
Sea Products Co	Everett, Wash	12 00	12 00	
Seattle Drying Co	Seattle, Wash	18 00	....	
Standard Chemical Co	Tacoma, Wash	54 00	36 00	
Swift & Co	North Portland, Ore	186 00	222 00	
Tacoma Lime Products Co	Tacoma, Wash	6 00	....	
U. S. Whaling Co., Agents	Seattle, Wash	24 00	....	
Walla Walla Meat and Cold Storage Co	Walla Walla, Wash	18 00	30 00	
Western Fertilizer Co	San Francisco, Cal	18 00	18 00	
Woodruff-Boyce Seed Co	Seattle, Wash	12 00	36 00	
Washington Fertilizer Co	Seattle, Wash	....	12 00	
				$882 00 $888 00

Total fees for 1919............................ $882 00
Total fees for 1920............................ 888 00

Total fees biennium......................$1,700 00

WASHINGTON STATE FAIR.

Hon. F. H. Gloyd, Commissioner of Agriculture.

Dear Sir: In compliance with the law I am submitting herewith the report of the Washington State Fair for the biennium closing October 31, 1920.

This period covers the 1919 and 1920 Washington State Fairs, and while the 1919 State Fair exceeded that of previous years, the 1920 State Fair was very much larger, and it can now be said without hesitancy that the Washington State Fair does compare favorably with similar institutions held in the Northwest.

Every department this past year showed a decided growth and not only were the improvements, exhibits and attractions far in excess of those of other years; but the attendance was so increased that it shows more than ever the much desired state-wide interest. There is now every opportunity for even a better fair in 1921, due to the success of the fair just held as was evidenced by the large number of exhibits, state-wide attendance and the entire absence of criticism.

The appropriation by the 1919 legislature for the State Fair, amounted to $41,400, segregated as follows: For supplies, material and service, $30,000 and for salaries and wages, $11,400. A request made for $10,000 for improvements was not granted.

The receipts and disbursements for the biennium are as follows:

RECEIPTS.

Balance 1917 Appropriation	$1,953.85
Balance 1919 Appropriation	41,400.00
Balance 1918 Fair	13,006.61
Cash Receipts (1919 State Fair Fund)	40,881.91
Cash Receipts (1920 State Fair Fund)	58,480.17
Total	$155,722.54

DISBURSEMENTS.

From 1917 Appropriation	$1,953.85
From 1919 Appropriation	40,228.00
From State Fair Fund	112,368.69
	$154,550.54
Remaining in 1919 Appropriation	1,172.00
Total	$155,722.54

There remains at the close of this biennium a deficit amounting to approximately $10,000 which is being held in the office of the Department of Agriculture, Olympia, pending the action of the 1921 Legislature. This deficit covers bills for material and supplies used for improvements on the grounds, a part of the 1920 fair expense and a small per cent of the 1920 fair premiums.

While there was no money appropriated for new buildings, out of the receipts there has been expended more than $26,000.00 for permanent improvements; which are enumerated as follows:

A new dining pavilion was constructed 56 feet wide and 200 feet long, which incloses five 40 feet by 40 feet dining rooms, each with a sanitary modern equipped kitchen. This building having an entire concrete floor was built at a cost of $6,624.06. Previous to this meals were served in five small and especially unsightly buildings, all of which have been removed from the grounds.

The new hog barn, 46 feet wide and 300 feet long containing 180 pens and an adequate judging arena, was built at a cost of $4,172.55. This building replaced two old small hog sheds.

The new dance hall, which has taken the place of a temporarily arranged platform covered by a tent, is 58 feet wide and 112 feet long, has a hard wood white maple floor and is an added attraction to the grounds, in both appearance and entertainment. This building was bought for a thousand dollars, was torn down and removed from the old Sumack Park and erected on the State Fair grounds at a total cost of $3,329.25.

There has also been constructed an extension to the present street car line along the entire south line of the Fair grounds, a distance of 1320 feet. This improvement together with an unloading platform was absolutely necessary, as it not only brings the live stock to the grounds, but enables the stockmen to store their cars on the grounds during the Fair. It might be added that there were fifty-three car loads of livestock on the State Fair grounds in 1920, while there were but twenty-one car loads during the 1919 Fair. This extension was built at a cost of $3,086.78 and it is hoped that at an early date it can be connected directly with the Northern Pacific lines.

Another added improvement during the past year was the construction of the new half-mile track within the mile track. The mile track had never been re-surfaced and as it has become rocky the plan now is to use it for automobiles and build a new half-mile track, exclusively for horses, which could be kept up at a much less cost. This was constructed at a cost of $3,486.76.

Other permanent improvements are enumerated as follows: The lowering of the entire system of water mains at a cost of $2,902.69. The planting of 400 new shade trees at a cost of $659.00. The construction of an unloading platform at a cost of $465.55. The rocks were removed from the centerfield and the ground leveled and seeded at a cost of $1,452.00, which not only makes it more sightly but changes it from a rough, rocky piece of waste land to a productive alfalfa field.

Other construction work on the grounds during the biennium covered the grading of roads, some betterment work in connection with the irrigation distribution, the addition of new flower beds and new lawns, and a general cleaning of the entire grounds of rocks and rubbish.

During the year there was an exchange made of a Chevrolet truck, originally costing $675.00, for a two and one-half ton Bethlehem truck, the price of which was $2,658.00. A credit of $700.00 was received on the Chevrolet truck, thereby making the total expenditure $1,958.00. This new truck was used for hauling material and supplies for the new buildings and especially valuable use was made of it during Fair week.

Approximately ten acres in the southwest corner of the fair grounds has been devoted to a tourist camp site. The expense of seeding and putting this land in order has been taken care of by the State Fair; but the expense of a superintendent and the various camp conveniences which have been installed have been paid for by the city park commission. These grounds are an exceptionally important feature during State Fair week.

The fair during the 1919 season continued under the management of Frank Meredith, former secretary, the writer being appointed secretary and manager December 1, 1919. Therefore the statements relative to the operations of the fair in general are confined more especially to the 1920 fair.

The real foundation of any state fair is the livestock and agricultural interests, and it can be stated that these departments during 1920 represented in a very large measure the actual livestock and agricultural conditions existing in the State of Washington. The superintendent of the livestock department, E. B. Marks (now deceased) was directly responsible for the large number of livestock exhibits; but due to the illness of Mr. Marks this department was very ably handled during the 1920 fair by Dr. L. C. Pelton, Chief of Dairy and Livestock Division, Department of Agriculture.

The Horticultural Building was filled to overflowing and the various counties competing represented the products of the State of Washington more completely than any display ever before assembled. Mr. H. C. Schumacher was superintendent of this department; but the real credit for the state-wide exhibit is due to the efforts put forth by Mr. M. L. Dean, Chief of the Horticultural Division, Department of Agriculture.

The poultry exhibits were far better than ever before and notwithstanding the fact that the poultry building is old and inadequate the show this year was a marked success. The superintendent, Mr. H. H. Collier, deserves the entire credit for the excellent showing made this year.

The exhibits shown in the woman's building outnumbered those of any former year and Miss Mary Remy should receive special mention due to her success in this department.

The boys and girls of the various clubs throughout the state, under the management of Mr. F. L. Audrain, were entertained by the State Fair for four days. Sleeping quarters and dining room accommodations were furnished to about sixty.

During the past biennium there has been a great deal accomplished toward making the State Fair assume a rival position among the other State Fairs; but there still remains a great many things to be done.

We need an extension and enlargement to the grandstand, more livestock barns, more barns for race horses, a new poultry building, a dairy products building, an addition to our present Horticultural Building and a machinery building which would be appropriate for exhibiting the respective industries of the state. Last, but most important the management believes, is the acquiring of a piece of land which joins the Fair Grounds, in order to take care of the increased attendance and automobile parking.

An explanation might be briefly given in regard to the above needs with reference to the 1920 Fair. It was necessary to make temporary provisions for all kinds of livestock, and especially did we need a machinery building in order that those exhibiting might have their goods sheltered. Automobiles were parked on rented ground, there was not sufficient space in the Horticultural Building and the grandstand was filled to overflowing during every afternoon performance.

The demand for exhibit space, both in the buildings and on the grounds, surpassed that of previous years, these exhibits being principally farm machinery, automobiles, trucks and tractors.

During the past biennium there has been nearly $30,000.00 paid out in premiums, but the condition actually existing is that the best livestock exhibitors who follow the circuit do not receive enough premium money to bear their expenses. The item of increasing premiums, especially in the agricultural and livestock departments, should not be overlooked.

Recognizing the fact that the State Fair is in a position to render a direct benefit in the way of education, its main purpose being that of an educational institution and through its large attendance it reaches more people than any other institution in the state; we believe that the next session of the legislature should bear in mind an ample appropriation for the continuance of the upbuilding of the fair, more improvements, the additional land and additional premiums. The fair will then be an educational institution of real service to the citizens of the State of Washington.

Respectfully submitted,
G. C. FINLEY,
Secretary-Manager.

November 30, 1920.

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3d

STATE OF WASHINGTON

Fifth Biennial Report

OF THE

Washington

Department of Agriculture

TO THE

GOVERNOR

July 1, 1920, to Sept. 30, 1922

1889

E. L. French, Director

OLYMPIA
FRANK M. LAMBORN, PUBLIC PRINTER,
1922

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LETTER OF TRANSMITTAL.

STATE OF WASHINGTON, DEPARTMENT OF AGRICULTURE.

Olympia, November 1, 1922.

Honorable Louis F. Hart, Governor.

Sir: The first report of the Department of Agriculture, as organized under the Administrative Code April 1, 1921, is submitted herewith in accordance with law.

In addition, the report covers the activities of the Department from April 1, 1920, to April 1, 1921, thus completing the Fifth Biennium since the organization of the Department.

All of which has been set out in as concise manner as possible, consistent with an intelligent statement of the facts.

Respectfully submitted,
E. L. FRENCH,
Director of Agriculture.

PERSONNEL OF DEPARTMENT.

E. L. French, Director of Agriculture.
F. H. Gloyd, Chief Assistant Director.

AGRICULTURAL DIVISION.

F. H. Gloyd, Supervisor, Olympia.
Beriah Brown, Assistant Supervisor Farm Marketing, Olympia.
J. E. Currey, Seed Inspector, Olympia.
H. P. Vermilye, Secretary State Fair, Yakima.

Grain and Hay Inspection Service.

R. R. White, Assistant Supervisor, Olympia.
R. C. Snyder, Chief Deputy Inspector, Seattle.
Clarence Nedervold, Chief Deputy Inspector, Tacoma.
T. W. Amos, Chief Deputy Inspector, Spokane.

HORTICULTURAL DIVISION.

Chas. L. Robinson, Supervisor, Olympia.

District Inspectors.

John B. Wiley, Walla Walla, District No. 1.
F. E. Bailey, Spokane, Court House, District No. 2.
W. P. Brown, Prosser, District No. 3.
F. C. Nielsen, Wenatchee, District No. 4.
W. L. Close, Yakima, District No. 5.
R. B. Phipps, Vancouver, District No. 6.
Theo. Albert, Chehalis, District No. 7.
Henry Huff, Sumner, District No. 8.
J. C. Eakle, Seattle, 417 County-City Building, District No. 9.
Carl O. Weiss, Chamber of Commerce, Everett, District No. 10.

DAIRY AND LIVESTOCK DIVISION.

Dr. L. C. Pelton, Supervisor, Olympia.

Veterinary Inspectors.

Dr. Cliff Ackley, Route 2, Winlock.
Dr. J. H. Martin, Spokane, 503 New Madison Hotel Building.
Dr. Julian Howard, Bellingham, 721 Garden St.
Dr. Jas. C. Mitten, Puyallup, 326 5th St., SW.
Dr. R. J. Donohue, Yakima.

Dairy Inspectors.

A. D. Fish, Creamery Inspector, Seattle, 405 Maynard Building.
Fred D. Stewart, Yakima.
G. G. Carman, Olympia.
O. C. Van Houten, 405 Maynard Building, Seattle.
George M. Hinman, Spokane, 503 New Madison Hotel Building.

DIVISION OF FOODS, FEEDS AND DRUGS.

Will H. Adams, Supervisor, Seattle, 405 Maynard Building.

Inspectors.

George S. Henderson, Food Inspector, Seattle, 405 Maynard Building.
H. W. Ayres, Drug Inspector, Seattle, 405 Maynard Building.
Mrs. W. H. Coffin, Bakery Inspector, Tacoma, 618 S. Cushman St.
M. C. Taylor, Feed Inspector, 405 Maynard Building, Seattle.

WEIGHTS AND MEASURES DIVISION.

W. B. Newcomb, Superintendent, Olympia.

Inspectors.

O. F. Spring, Yakima.
D. O. Downing, Mt. Vernon.
J. W. Anderson, 3832 Wallingford Avenue, Seattle.
K. S. Pilcher, Spokane.

STATE CHEMISTS.

Dr. C. W. Johnson, University of Washington, Seattle.
J. L. St. John, Acting Chemist, Washington State College, Pullman.

THE FIFTH BIENNIAL REPORT OF THE STATE DEPARTMENT OF AGRICULTURE.

Honorable Louis F. Hart,
Governor of the State of Washington,
Olympia, Washington.

Sir: Under the provisions of the Administrative Code, my duties as Director of Agriculture commenced April 1, 1921. In addition to the divisions of this department, which existed prior to the passage of the Administrative Code, that code added to the department the divisions of weights and measures, the grain and hay inspection service, formerly performed by other state departments, and imposed upon the division of agriculture of this department the duties formerly performed by the director of farm marketing, the latter office being thus abolished.

I found on taking office each of the divisions of the Department of Agriculture headed by men of long experience in the work, each of whom had worked his way up from a subordinate position in the same division and had received his promotion strictly on merit. The same is true of the divisions added to this department by the Administrative Code. The men in charge of those divisions, when in other departments, had long experience in the work, knew all of the details completely and were highly competent.

I found the same conditions existent, practically, with all of the subordinates of the department. In every one of these departments, the field men particularly, of necessity, were men of scientific training and large practical experience. No other classes of men were competent to do the work. The difficulty in the past has always been, and it will continue to be, to retain the highly competent men needed in all of these departments against the competition of private employers, who are constantly offering inducements of higher pay and easier working conditions. The department in the past has lost several heads of divisions in this way, their places being taken by the best qualified of the subordinates in the division.

This being the condition when I took office, I have not found it necessary to make any changes in the personnel of the department save to make appointments in subordinate positions to fill vacancies caused, in most instances, by the resignations of men the department would like to have retained, the retiring employees having better opportunities offered them in private employment than in the service of the state. So far as division heads are concerned, and in great part in the field and office force, the personnel of the department has not been changed during my tenure of office.

The work performed by each of the divisions of the department during the biennium is fully set out in the separate reports of these division heads, submitted herewith. It would be simply a waste of space to summarize that work here. The reports speak for themselves.

The suggestions for changes and betterments making for higher efficiency in this department have already been submitted to your excellency by me in the budget for the coming biennium, and it is unnecessary to repeat them here; nor repeat the financial statements embodied in that budget report.

There is this much to be said for the conduct of this department, I do not believe that there is a private corporation in the state, doing the same volume of business, which is conducted with greater economy or a higher degree of efficiency than is the State Department of Agriculture. This is due to the general high character of its employees, to their competency and particularly to the deep interest which they take in their work.

There is one suggestion which I would like to offer. In visiting the larger fairs held in this state, as part of my official work, I was struck with the deep interest which farmers generally displayed in the educational features; their eagerness to learn how certain results were accomplished and particularly their interest in the pure bred livestock. I am convinced that practically nothing has done so much toward raising the standard of the dairy stock as the showings made at these various fairs. The practical economic value of this is shown by the fact that Washington stands first in average milk production per cow among all of the states in the Union. Exhibitors at state and district fairs go to heavy expense in making exhibits, and the cases are few wherein even the winners of premiums in any division get back the actual money expenditures they have made. A direct appropriation by the state for each of the district fairs, as well as for the State Fair, to be expended solely in the payment of premiums directly to exhibitors, might be a profitable investment.

In conclusion, I wish to thank you for the decided and continuing interest which you have steadily shown in the workings of this department, and the hearty co-operation which the department has had from your office on several occasions, when such co-operation was most needed.

Respectfully,
E. L. FRENCH,
Director of Agriculture.

DIVISION OF AGRICULTURE.

Honorable E. L. French,
Director of Agriculture,
Olympia, Wash.

Sir: I have the honor to transmit herewith for your consideration reports in detail of the activities of the various subdivisions of the Division of Agriculture during the present biennium as follows:

1. The Washington State Fair, by H. P. Vermilye, Secretary.
2. Seed Inspection, by J. E. Currey, Seed Inspector.
3. Grain and Hay Inspection, by R. R. White, Assistant Supervisor.
4. Farm Marketing, by Beriah Brown, Assistant Supervisor.

The reports of the State Fair and Seed Inspection cover the full two-year period, those of Grain and Hay Inspection and Farm Marketing from April 1, 1921, the date on which the Administrative Code became operative.

The inspection of fertilizers, lodged in this division by the Administrative Code, has been done by our Feed Inspector, and recital of that activity is included in the report of Mr. Will H. Adams, Supervisor of Foods, Feed, Drugs and Oils.

Referring to the operation of the several divisions of the duties imposed on the Supervisor of Agriculture, I desire to make the following observations:

THE STATE FAIR.

From December 1, 1920, until April 1, 1921, the department had no funds with which to pay salaries of State Fair officials. As a result of our inability to employ a secretary during that period, the office at Yakima was closed and the books kept in the office of the Commissioner of Agriculture at Olympia.

During this time there was uncertainty as to whether or not the Legislature would make provision for holding fairs in 1921 and 1922. The Northwest Fair and Racing Associations held their annual meetings and fixed the dates for 1921 fairs, disregarding the Washington State Fair. The law specifies the dates when our State Fair may be held, and these dates were all allotted by these associations to other fairs. The circuit being closed against us made necessary that attractions usually following fairs had to be secured for 1921 at greater expense than would have been necessary had we been in the circuit, privileged to join with the other fairs in procuring these attractions.

The Legislature made an appropriation of $40,000.00 to assist in defraying operating expenses of 1921 and 1922 fairs. This was available April 1, 1921.

Mr. H. P. Vermilye, of Yakima, was appointed Secretary of the fair, and on April 1, 1921, took active charge of the work devolving on that official. He began preparations for the 1921 fair badly handicapped, due to the fact that for four months we had no secretary, and it is during those months that the preliminary work for the next year's fair is done. He was unaccustomed to state fair work and entirely unfamiliar with the duties required of the executive officer of this particular fair. His broad business experience was such, however, that he soon had the situation well in hand, and in the face of handicaps which seemed at the beginning almost insurmountable, he gave us in September, 1921, the most successful fair that had ever been held on the State Fair grounds.

There were certain improvements absolutely necessary if the comfort of the fair patrons was to be regarded. We anticipated the gate receipts to the extent of using enough of our appropriation for operating expenses to make these improvements.

We went a step further. The poultry industry has grown to mammoth proportions in Western Washington. It had been almost overlooked by the people in Eastern Washington. We believed an object lesson in the form of a demonstrational laying house would stimulate an interest in this important industry. We built the laying house and equipped it with modern conveniences. We secured 100 laying pullets and put them in the building. They showed due appreciation of their splendid new quarters by working enthusiastically during the entire week of the fair. This was one of the big attractions. Thousands of visitors came to the fair day after day and made repeated visits to this exhibit in order to get all information it was possible to obtain from our experts in charge, who really conducted a short course in poultry husbandry during this week. Result from this one demonstration—the Yakima Valley, which prior to that time was compelled to import poultry products, in one short year had established commercial poultry plants, from which poultry products are now being exported in car lots. The expenditure of the money in building this demonstrational plant has been more than justified by the results. It is an educational demonstration worth while.

The pronounced success of the 1921 fair paved the way for a still greater one in 1922. When the books were closed after the 1921 show, we had intact one-half of the legislative appropriation and enough more funds to pay salaries and expenses to April 1, 1922, the beginning of the second year of the biennium.

The growth of the 1920 fair over those of previous years, and the still greater growth of the 1921 fair, indicated that the people really were coming to the conclusion that this is a State Fair. We were admonished that still more elaborate preparations must be made to care for the people and for exhibits at the 1922 fair.

We husbanded our resources during the summer in such manner that now, at the close of the second and last show of this biennium, we are able to pay all claims against the State Fair management (including premiums, labor and improvements) and still have a small balance in our appropriation.

SEED INSPECTION.

Washington is rapidly forging to the front as a seed producing state. Our State Legislature took cognizance of this fact when in 1919 provision was made for field inspection of growing crops. Like other services of value, something of an educational campaign was necessary before a general demand could come for inspection and certification. Our Seed Inspector has done the pioneering among the seed producers. There is now a steadily increasing demand for certified seed. This is particularly true of potatoes.

GRAIN AND HAY INSPECTION.

This very important branch of the service rendered by this department, like the grading inspection and standardization of horticultural products, is properly classed as part of the Bureau of Farm Marketing. When the 1921 Legislature transferred this work to the Department of Agriculture it did so coupled with the injunction that the service must cost the tax payers nothing. This feature was a new departure. Always, prior to the 1921 session, the amount of fees collected was supplemented by an appropriation from the general fund. This could not be avoided because the fees permitted to be charged were not sufficient to support the service.

However, to enable the department to earn fees sufficient to make the service self supporting, the 1921 Legislature passed an act authorizing the Director of Agriculture to fix the fees at an amount that would pay the expense of operation. A small increase in the rate per ton for inspection service was made, and by strict economy in handling the work, the inspection has been promptly and efficiently done. All expense incurred has been paid without delay, and we have a small amount to the credit of the Grain Inspection Revolving Fund.

I commend to you for your careful consideration the exhaustive report of the activities of this division as prepared by Mr. R. R. White, Assistant Supervisor in charge of the Grain Inspection Service, herewith transmitted.

FARM MARKETING.

The Administrative Code formally transferred the Bureau of Farm Markets to this department, and the service under the name of Farm Marketing began April 1, 1921. However, many of the essential elements of Farm Marketing were supplied by the Department of Agriculture for many years prior to that date.

The 1921 Legislature opened up a new field of service for this department when it made provision for the organization of co-operative marketing associations under supervision of the Director of Agriculture. The purpose of this is to insure proper observance of the laws to the end that farm products may be marketed in an orderly manner.

These matters are all fully discussed by Mr. Brown, Assistant Supervisor in charge of Farm Markets, in his report.

All of which is submitted herewith.

Very respectfully,
F. H. GLOYD,
Supervisor, Division of Agriculture.

STATE FAIR.

To the Honorable E. L. French, Director of Agriculture:

Sir: I have the honor to submit herewith the report of the Washington State Fair for the years 1921 and 1922 up to October 31, 1922:

Receipts.			
Appropriation		$ 40,000.00	
Entrance fees, gate money, concessions, etc., 1921	$52,291.22		
" " " " " " 1922	59,291.11	111,582.33	
			$151,582.33
Disbursements.			
From appropriation		$ 36,121.15	
Direct expenditures		102,457.42	
			138,578.57
Balance unexpended			$13,003.76

During the biennium the following improvements were made:

A greatly needed rest room for women; 750 seats were added to the grandstand; the child's welfare building was remodeled; the arts building renovated; a poultry demonstration building erected; 1,200 feet of new seven-foot board fence was built around the race track; the machinery building was braced to make it safe for use; a new barn 40 feet by 220 feet was built for dairy cattle; a third line of stalls, each 200 feet in length, was placed in two other stock barns; 220 lineal feet of hog pens six feet wide were constructed; 50 box stalls were built for race horses; the loading platform was extended 300 feet, the floor of the auditorium was raised, providing 6,000 square feet of exhibit space; the office under the grandstand was rearranged, making an addition of 1,600 square feet for exhibit space; the water system was extended 1,000 feet to the new stalls and for the convenience of the sprinkler on the race track.

Respectfully submitted,
H. P. VERMILYE,
Secretary-Manager.

SEED INSPECTION.

J. E. Currey, Inspector.

SCOPE OF WORK.

The seed work of the department covers two somewhat distinct fields, the inspection of seeds as they are offered for sale on the market, and the inspection of seeds as they are grown in the field. The former is carried on under what is known as the Pure Seed Law and the latter as the Seed Certification Law.

INSPECTION WORK UNDER THE PURE SEED LAW.

During the biennium the different wholesale and retail stores handling seed stocks have been inspected, samples taken and tested for germination and purity.

The different amounts of stock condemned for containing noxious weed seeds or germinating lower than required by law, is given below:

Red Clover	52,400	pounds.
Alfalfa	36,500	"
Alsike	17,350	"
White Clover	8,650	"
Kentucky Bluegrass	6,400	"
Orchard Grass	1,500	"
Vetch	1,100	"
Timothy	760	"
Sweet Clover	700	"
Western Rye Grass	200	"
Total	125,560	"

The above figures represent largely numerous small lots scattered over the state. They do not include stocks held up from sale until correctly labeled.

PROSECUTIONS.

During the biennium one case has been taken to the court, and that was against the Northwest Seed Company of Seattle. This company was fined fifty ($50.00) dollars and costs for shipping alfalfa seed containing several times the amount of buckhorn plantain allowed by law.

LICENSES.

The 1921 Legislature amended the Seed Law by requiring all seed dealers to obtain a license from the Department of Agriculture. It was provided in the bill as introduced to charge a fee of ten ($10.00) dollars to the larger seed companies and a one ($1.00) dollar fee to the small retailer.

The one dollar fee was struck out of the bill, but the wording of the clause designating who should be required to pay the ten ($10.00) dollar fee was left in such a way that the Attorney-General ruled all seed dealers, whether engaged in the business as a side line or whether it included the major part of their business, were required to take out a license. This included small feed-stores and the like.

Such a system of fees cannot be said to be built on a scientific basis. It is too large a fee for retailers in small country places who handle only a small amount of seed a season, the purpose of handling seed being the accommodation of their regular customers, and not to reap a profit from the sale of seed. On the other hand it is beneficial in that it has concentrated the seed business in small towns into a few dealers, experienced in the business and who usually use care in purchasing stock from reliable sources. The largest source of infection from noxious seeds comes from small town stores shipping in seed from out of the state, indiscriminately, buying from dealers or others who advertise cheap seed. The license system has had a deterrent effect on this sort of trade.

It has been feared by some of the trade and others that the license applies to grocery stores and others handling seeds in packet. All this business is carried on consignment and where consignors are licensed, stores handling the packet seeds are exempt.

SEED GRADES.

The present law gives the department authority to put into effect seed grades whenever it is decided to be desirable. This should be done as soon as the United States Department decides on what should constitute grades for interstate trade, and naturally such grades should be used by this state if acceptable. The trade wants grades as it will give a better basis on which to do business and is the logical manner in which to sell products. With the establishment of grades it would be more than ever imperative that the department have a laboratory to do its work of analysis.

LABORATORY.

The present law requires that a laboratory be maintained by the department, but no appropriation has been made for the purpose. The Department of Botany at the State College has very generously assisted us in the analysis work. As a result of having to depend upon the College the analysis of stocks is slowed up and of more or less inconvenience due to the isolation of the College. A laboratory should be put in operation during the next biennium under the department, so the seed inspection work may be carried on effectively.

SEED CERTIFICATION.

This phase of the seed work has increased very markedly during this biennium. In order to show the large increase a report for 1922 is included on stock inspected up to the second inspection. A glance at the accompanying table shows that in 1920, two hundred and thirteen acres were entered for certification, and in 1922, twelve hundred and ten acres. This increase is due to the large demand for certified seed that has developed the last few years. Many commercial potato growers have found that it pays to use good seed, and growers in good seed potato districts are making an effort to supply this market.

The work has also expanded into more counties than last year. For in 1922 Clarke County leads in the acreage entered, with Spokane a close

second, followed by Whitman and Stevens Counties. In Clarke County, and in most sections west of the mountains, the growers are interested in the development of the Burbank potato. It is a long white potato desirable for marketing as table stock, and is in demand in California for seed stock. In the Eastern part of the state the principal variety grown is the Netted Gem, a variety much in demand in the Yakima section.

SUMMARY OF SEED POTATOES ENTERED FOR CERTIFICATION.

COUNTY	1920			1921			1922		
	No. of Applications	Acres Entered	Passed Final Inspection	No. of Applications	Acres Entered	Passed Final Inspection	No. of Applications	Acres Entered	Passed Second Inspection
Clarke	12	41	32	27	127	60	43	300	21
Spokane	19	132	64	29	186	126	52	289	44
Whitman	.....	.....	.....	3	70	28	17	228	77
Stevens	.....	.....	.....	2	9	2	27	150	7
Columbia	.....	.....	.....	2	14	14	8	88	48
Skagit	1	4	4	6	43	19	8	54	.....
Walla Walla	.....	.....	.....	......	.....	.....	5	16	1
Pierce	.....	.....	.....	......	.....	.....	4	18	4
Cowlitz	.....	.....	.....	2	4	4	7	14	2
Lewis	3	21	16	3	21	8	.....	.....	.....
Kittitas	.....	.....	.....	.....	.....	.....	3	9	2
King	.....	.....	.....	1	1	1	2	7	.....
Skamania	.....	.....	.....	1	1	1	.....	.....	.....
Whatcom	.....	.....	.....	2	2	2	2	6	.....
Thurston	3	15	15	......	.....	....	1	1	1
Pend Oreille	.....	.....	.....	......	18	5	4	6	.....
Snohomish	.....	.....	.....	2	5	2	2	7	.....
Grays Harbor	.....	.....	.....	......	.....	.....	3	17	.....
Totals	38	213	131	80	501	272	188	1,210	207

THE MOSAIC DISEASE OF POTATOES.

Looking at the table giving the summary of potatoes inspected, we find that in 1922 only seventeen and one-tenth per cent (17.1) was passed on the second inspection as compared to fifty-four and twenty-nine hundredths (54.29) per cent on the final inspection in 1921. The heavier per cent failing to pass in 1922 can be laid to the fact that it was discovered many of our strains of potatoes were infected with the Mosaic disease much greater than it was believed or had been recognized.

Dr. Geo. K. K. Link, a Mosaic disease specialist of the Federal Department, made a tour of the state with the writer during the latter part of July, 1922, and it was found that in certain varieties such as the Burbank type, the first symptoms of this disease under all conditions were not being recognized in our inspection work. Under very favorable conditions it was being recognized, but where the symptoms were more obscure they were not diagnosed.

The disease is a virus disease, as indicated by a mottling of the leaves, the light green areas indicating the chlorophyll is destroyed by the virus, and accompanied by a more or less puckering of the leaves. In the severe stages the plants are much dwarfed, but the early symptoms may be manifested in vines normal in size. Due to the reduced leaf surface manufac-

turing starch the yield may be cut from twenty-five to seventy-five (25 to 75) per cent.

The disease is carried in the tuber and is spread by insects, such as the aphis, feeding on the leaves and then transferring the juice of infected plants to healthy ones. The disease cannot be seen on newly infected plants until the tubers are planted the next year. Control measures are difficult, therefore, and must come from isolation of the field, control of the insects and early thorough roguing.

In dry hot sections, such as in Eastern Washington, the early symptoms are masked or suppressed in most instances, which makes it difficult to be positive as to the amount of the disease.

In the tour with Dr. Link and with inspections of fields during the season it was found to be a trying problem to diagnose positively as to just where the line was between healthy and diseased plants. Many instances were found where the same strain of potatoes, under different growing conditions, some favorable for the manifestation of the disease, and others not, gave widely varying results in amounts of the disease indicated.

Growing conditions best suited for the disease to be seen, occur in cool humid sections where the plants will make a rapid growth. Such a section is the Skagit Valley. Mosaic can be seen almost as well here as if stock is grown in the greenhouse. For that reason it is believed desirable that for next year a small sample of each lot entered for certification be planted in a plot under Skagit Valley conditions. This will give us a check on the Mosaic in fields entered from the Eastern part of the state especially, and will help on different fields grown west of the mountains, where the disease can usually be seen more readily. With such a system greater progress can be made against the disease and our inspection work will be immeasurably aided. This year the State of New York is growing under greenhouse conditions for the determination of Mosaic all lots of potatoes entered for certification. With such favorable conditions as exist in the Skagit Valley for the manifestation of the disease it is believed we will get just as reliable results without plots.

Mosaic is more or less prevalent in the potato stocks of other northwestern states, and judging from fields planted to stock shipped from Minnesota and the Middle Western and Eastern States, it is believed they are not much farther advanced in the control of this disease. One field in Clarke County planted to Minnesota certified seed, showed sixty (60) per cent of the severe stages of Mosaic, and was one of the worst fields inspected during the season.

With the above plan for checking on potato stocks for their Mosaic content, there is no doubt but that certification will provide a reliable method for supplying stocks practically free from this disease. This year stocks passed for certification are believed to contain less than fifteen (15) per cent of Mosaic east of the mountains and less than five (5) per cent on the west side. Next year it is hoped to cut this down to a smaller per cent.

PLOT WORK.

To assist our certification work it was felt that some means should be used to determine the producing values of the different strains of potatoes being certified. To do this it was necessary that all our stock should be planted in plots under the same soil and environmental conditions. The plan was to grow this stock in this manner and decide if some strains were being certified, the yielding power of which was lower than it should be.

On the west side of the mountains all strains being certified were planted in twentieth acre plots on the farm of Chas. H. Greely near Ridgefield, Clarke County. Fifteen plots were planted here. East of the mountains, on the farm of Geo. J. Cannon, fifteen plots were also planted. These plots represented practically all the strains being certified.

Fortunately both places were located in sections fairly favorable for the diagnosis of Mosaic, and the plots were thus very useful in checking up on Mosaic of fields planted to the same stock. They thus turned out to be worth putting in for this purpose alone.

Due to the development of the Mosaic question and the fact that each plot contained different amounts of this disease, the producing power of the different strains cannot be tested on the proper basis. However, they will be dug with the view of seeing what effects different degrees of Mosaic will have on production.

Professor J. E. Larson assisted us very greatly in the plot work in Clarke County, and Mr. F. E. Bailey, District Horticultural Inspector of Spokane, supervised the planting of the stock in Spokane County. Thanks are due to Mr. Chas. Greely and Mr. Geo. J. Cannon for their co-operation in donating the use of the ground and machinery for planting the plots.

As a partial means of helping the farmers of the Yakima Valley decide as to good seed potato producing sections, we assisted Mr. W. L. Close, District Horticultural Inspector of Yakima, and Mr. C. H. Behnke, Deputy Horticultural Inspector, who had the work in charge, obtain samples of seed potatoes for planting in plots in the Yakima Valley. Sixteen lots were obtained from as many different sections. An inspection of these plots showed the value of good seed without a doubt. The test was of great interest to many growers who visited them. No report has yet been issued as to results of this test.

OTHER SEED CERTIFIED.

In 1920 fifty-five acres of Climax oats were certified as pedigreed stock in Clarke County, and ten acres of Foise wheat as improved stock. In 1921 thirty acres of Climax oats and ten acres of wheat were passed as pedigreed and improved stock in the same county. In 1922 eighteen acres of Climax oats were entered from Cowlitz County, twenty from Clarke County and nine acres of Jenkins Club wheat and eight acres of grain from Yakima County.

GRAIN AND HAY INSPECTION.

R. R. White, Assistant Supervisor.

November 1, 1922.

For the convenience of the public a review of the State Grain and Hay Inspection Service is hereinafter set out in brief form.

The inspection of hay and grain has been established in this state by law since 1896, and for the past twelve years up to April 1, 1921, was under the jurisdiction of the Public Service Commission of the State of Washington.

By the adoption of the Administrative Code by the Legislative session of 1920-1921, the Inspection Service was transferred to the Department of Agriculture, and this report will be confined largely to the time that the inspection has been rendered under the direction of the Department of Agriculture.

It may not be out of place to set out that the inspection of grain and hay has been a financial loss to the taxpayers of the state to the extent of $46,211.02, in addition to appropriations made from general fund by the Legislature from year to year, from 1896 to 1920.

The financial statement hereinafter set out will cover from April 1, 1921, until October 31, 1922. This statement is made possible by the Administrative Code in placing the work of this division, along with other agricultural work, under the supervision of the Director of the Department of Agriculture, who used successful rigid economy, and which has made it possible to carry on a very much broader field of service to the grain and hay producers of this state. While economy has been the watchword, efficiency has been the goal.

The Legislature very kindly provided a revolving fund of $200,000.00 to make possible the carrying on of the grain and hay inspection throughout the biennium, safeguarding the appropriation by providing that expenditures from this fund should not exceed the receipts of fees collected from the service rendered by the state, and as the expense was limited to our earnings and confronted by the report of past years experience, which shows each year a deficit for the state, a conference was called with the Public Service Commission of Oregon and the Grain Inspection Service to consider the advisability of both states increasing the inspection fees that have been the official fees for the past year, with the result that the State of Oregon found from the large volume of wheat coming to Portland that they could render the service without a direct increase of the inspection fee. They do, however, charge the regular fee for inspection on all grain unloaded out of regular working hours, and in addition they charge all of the overtime of the men rendering the service for the state. The State of Washington found that it would be necessary to increase the inspection fee on sack grain from 6 cents to 7 cents, and on bulk grain from 4 cents to 5 cents per ton, both on in and out inspections, and reduced the inspection fee on flour from 7 cents per ton to 5 cents per ton, believing this action would aid in the milling of flour at home and the exporting of the manufactured product.

The adoption of the Administrative Code made many changes in the personnel of the various state offices, and the Grain and Hay Inspection Service was not an exception, but in view of the changes, the results of the service seemed to confirm the thought that these changes have not been destructive of efficiency and economy.

The Code also made it necessary for the head office of the Grain Department to be moved from Tacoma to Olympia, and the books and records of the Grain Department are now in the office of the Department of Agriculture and under the director's close supervision.

AMENDMENTS TO THE FEDERAL GRAIN STANDARDS ACT.

Early in the year of 1921, a survey of the United States Grain Standards Act was begun with the Secretary of the Department of Agriculture at Washington, D. C., to permit a thorough investigation of the standards as applied to wheat grown in this state. This request was denied. However, after repeated demands the State Department succeeded in getting the Honorable Henry C. Wallace, Secretary of Agriculture, by letter of March 4, 1922, to consent to open the grades for hearing.

On receipt of this letter the State of Washington deeming the question of so great importance to the northwest, solicited the support of the States of Oregon, Idaho and Montana in joint conference, and many conferences were held throughout the wheat belt of this state and Oregon jointly with the Inspection Services of both states, as well as in the wheat market centers, final conference being a joint conference of the four states held in Spokane on March 20, 1922. This meeting was very largely attended by farmers and representatives of farm organizations, as well as dealers, millers and exporters.

The State of Oregon was represented by Honorable Fred A. Williams, Chairman, Public Service Commission, and Mr. J. W. Church, Chief Grain Inspector for the State of Oregon; Idaho was represented by Mr. C. B. Ahlson, State Grain Commissioner of Idaho; and Mr. John M. Davis, Chief of Division of Grain Standards and Marketing, represented the State of Montana. At the close of the day's session a report was submitted to Washington, D. C., being the changes desirable to the wheat industry of the Northwest. Because of the great importance of this proposed modification of standards the report is set out hereinafter in full; also the results of the decision reached by the Secretary of Agriculture, and on which changes the wheat crop of 1922 has been marketed:

"Honorable Henry C. Wallace, March 20, 1922.
Secretary of Agriculture,
Washington, D. C.

Dear Sir: We, officials of Idaho, Montana, Oregon and Washington, having charge of grain inspection in our respective states, have jointly considered your letter of March fourth at hearings had in both wheat growing districts and shipping terminals of Oregon and Washington, after careful consideration recommend as follows:

One. That the method of determining test weight per bushel be not changed.

Two. The following changes in sub-classes for hard red spring. First, that there be added to sub-class dark northern spring a premium grade known as *fancy dark northern spring*, the requirements for which shall be *ninety-seven* per cent dark hard and vitreous kernels and minimum test weight fifty-nine pounds per bushel. Second, that the minimum texture requirements for northern spring be increased to forty per cent.

Three. Recommend so-called wheats of special limitations as applied to hard red winter and hard red spring be eliminated except as to Durum.

Four. Moisture content. That the present moisture limits for number one wheat be retained and the present system for assessing moisture be retained.

Five. That the present classes of common white and white club be combined into one class to be designated as white wheat, and that this class be subdivided into three sub-classes, namely, hard white, soft white, and western white. Hard white: This sub-class shall include wheat of the class of white wheat consisting of seventy-five per cent or more of hard (not soft and chalky) kernels, but may not include more than ten per cent of white club, white club hybrid or sonora wheats. Soft white: This sub-class shall include wheat of the class of white wheat, consisting of less than seventy-five per cent (not soft and chalky) kernels, but may not include more than ten per cent white club, white club hybrid or sonora wheats. Western white: This sub-class shall include all white wheat not meeting the requirements of the sub-class hard white and soft white. It is understood that the preceding class may still include, in addition to the above, the ten per cent of red wheat as allowed at present, this being in conformity with the proposed changes as outlined in the secretary's letter with the exception that the name Western White be substituted for that of White Walla. We recommend that the percentage of mixture, when in excess of ten per cent in the sub-class western white be shown in the remarks column of all certificates excepting export certificates.

Six. We recommend that the test weight for the class white wheat for number one be *fifty-eight* pounds to the measured bushel.

Seven. We recommend that the definition for mixed wheat as provided by the present United States Grain Standards be not changed.

Eight. Smut dockage. That there be no change in the present system of smut dockage, but that an allowance of in excess of *three smut* balls to fifty grams of wheat be permitted before assessing a smut dockage where wheat carries no odor of smut, smut dockage to be determined as at present provided for in the grade rules in paragraph (a).

Nine. We recommend the adoption of but one sub-class for soft red winter wheat, namely, red winter, with test weight of sixty pounds for number one, it being mandatory that the certificates on incoming shipments show the predominating variety.

Ten. Foreign material other than dockage. We recommend that there be no change in the present penalties for foreign material other than dockage, but add to the certificate stating the character of foreign material.

(Signed) FRED A. WILLIAMS,
Chairman, Public Service Commission of Oregon.
E. L. FRENCH,
Director of Agriculture of Washington.
C. B. AHLSON,
State Grain Commissioner of Idaho.
JOHN M. DAVIS,
Chief of Division of Grain Standards and Marketing, of Montana."

"DEPARTMENT OF AGRICULTURE.

Office of the Secretary, Washington.

Pursuant to the authority vested in the Secretary of Agriculture by the United States Grain Standards Act, approved August 11, 1916, (39 U. S. Statutes at Large, page 462) I, Henry C. Wallace, Secretary of Agriculture, do hereby fix, establish, promulgate, and give public notice of, the following changes, which shall become effective on the seventeenth day of July, 1922, in the official grain standards of the United States for wheat as heretofore promulgated by the Secretary of Agriculture:

Strike out Class V and Class VI and insert in lieu thereof the following:

CLASS V.

WHITE.

This class shall include all varieties of white wheat, whether winter or spring grown, and may include not more than ten per centum of other wheat or wheats. This class shall be divided into three sub-classes as follows:

HARD WHITE.

This sub-class shall include wheat of the class white, consisting of seventy-five per centum or more of hard (not soft and chalky) kernels. This sub-class shall not include more than ten per centum of wheat of the varieties Sonora and White Club, either singly or in any combination.

SOFT WHITE.

This sub-class shall include wheat of the class White, consisting of less than seventy-five per centum of hard (not soft and chalky) kernels. This sub-class shall not include more than ten per centum of wheat of the varieties Sonora and White Club, either singly or in any combination.

WESTERN WHITE.

This sub-class shall include wheat of the class White, consisting of more than ten per centum of the varieties White Club and Sonora, either singly or in any combination.

Wherever necessary, combine or change the present standards so as to effectuate the foregoing changes in the class and sub-class designations and definitions, and change subdivision (f) of the requirements for the No. 1 grade of all sub-classes of the class White to read as follows:

> "(f) may contain not more than five per centum of wheat other than white, which five per centum may include not more than two per centum of durum wheat."

RED WALLA.

Change the designation of the sub-class Red Walla to read Western Red, wherever it appears in the standards.

In testimony whereof I have hereunto set my hand and caused the official seal of the Department of Agriculture to be affixed, this seventeenth day of April, 1922.

HENRY C. WALLACE,
Secretary of Agriculture."

The beneficial effect of these changes in the Federal Grain Grade Standards will mean between $250,000.00 and $300,000.00 for this year's crop more to the producer, and even greater claims are being made for the saving because of this modification

One must bear in mind that this investigation was nation wide, and the only changes made were two of the ten requested by the Northwest. The department is quite convinced that the wheat growers of this state are injured and losing great sums of money on the class of wheat covered under these recommendations, because our first and second recommendations (No. 1 and No. 2) were not granted, and quite recently have renewed its request for another hearing through E. G. Boerner, Grain Investigator, Bureau of Markets and Crop Estimates, Washington, D. C. There possibly is no reason to doubt the desire of the Federal Government to work out wheat grades that will meet the conditions all over the nation. They might justly be criticized for not carrying on a more extensive study of the wheat problems in the various Pacific Coast states, and particularly the northwestern states.

PORTLAND CHAMBER OF COMMERCE TYPE SAMPLES.

The summer of 1921, during the movement of the crop, this department aided in having the type samples for exportation of wheat used by the exporters, and designated as Portland Chamber of Commerce Type Samples, set aside by the Federal Government, in that the wheat grown in the northwest and sold under these type samples was penalizing our wheat farmers because of the low grade wheat being marketed thereunder. Hearings were held by the Federal Supervision Board in Tacoma, Seattle and Portland, and much time and effort was consumed in securing information that would aid the Federal Board to rest their case and set aside the type sample practice. This investigation started as early as July 1, 1921, and the decision holding the Portland Chamber of Commerce Type Samples illegal was not secured until January 17, 1922, and became operative on July 1, 1922, which was in time for the beginning of the present export market of the year 1922.

TEST WEIGHT OF WHITE WHEAT.

The wheat growers of Soft White and Club wheats in this state attempted to secure through the Legislature a law that would provide them relief by officially establishing 58 pounds to the measured bushel for the classes of No. 5 and No. 6 White wheat, which is now known as class No. 5 White wheat.

This law provided a set of premiums and discounts, and has made a great deal of work for the department in advising the farmers and holding hearings with the farmers to show that it will not accomplish what they had hoped it would accomplish, unless they, the farmers, write the terms of the law into all sales contracts and make it a part of each sale. The measure is enforceable by the farmer, or party selling the wheat, if it is violated by the buyer, and is not a matter wherein the state has a right to participate.

SMUT DISCOUNTS.

In the vigilance to secure the best possible grain standards, it is also prime importance that off grade grain or grain carrying foul and smut dockage should be provided with a set of discount rules that would give the farmer a fair honest rate for that portion of his grain affected. Because of the presence of smut, particularly in the export wheat, in this state where at least 40% to 50% is smutty in the average year, with 70% to 80% for the present crop, an effort has been made and many hearings held to reach a fair equitable decision as to the cost of smutting smutty wheat; the trade contending for a very high smut discount, 30% to 50% higher than that provided in the rules adopted by the Public Service Commission in 1919-1920. A very comprehensive report is being worked out jointly with the State of Oregon, and joined in by the Federal Government, to determine the cost of preparing smutty wheat for market. Every item of detail entering into this cost is being taken into consideration, actual smutting is being done by the States of Washington and Oregon and the Federal Government jointly in the Portland export markets and the tide-water markets of this state. This joint arrangement was brought about by the state in securing a permit from the grain dealers, millers and brokers to make these investigations at the various industries handling this grade of wheat. It is to be hoped when the investigation is complete, which will be before January 1 next, that it will be a basis on which future marketing can be based knowing that the results are fair to the producers and all other interested parties.

Too much emphasis cannot be placed on the necessity of education among the farmers on the matter of carefully cleaning their wheat, planting pure seed, and of treating the seed to aid in smut resistance. It may be of some interest to submit here the figures secured from our smut and foul dockages from April 1, 1921, to March 31, 1922, which results are indeed very staggering in the totals as will be observed.

CAPTAIN SMUT AND FOUL DOCKAGE.

Wheat handled by our Department:

April 1, 1921, to March 31, 1922	1,021,205 tons
This equals	34,720,907 bushels
or 3/5 of the wheat grown in Washington last year.	
Dockage	350,720 bushels
Cost to producer on $1.00 basis per bushel on basis of wheat	$350,720.00
Freight on same	50,655.00
Hauling from farm to station	15,885.00
Threshing and sack	26,835.10
Grand total	$440,095.10
Smut dockage	116,110 bushels
Value in dollars on basis of wheat	$116,110.00
Freight	28,580.00
Smut discount	2,575.00
Hauling from farm to market	8,943.00
Threshing and sacks	10,000.00
Total	$216,208.00
Total foul dockage and smut dockage	$660,303.10

These totals of smut and foul dockage do not give any idea of how much loss in yield per acre has resulted because of their presence in the wheat.

GRAIN WAREHOUSING.

In the State of Washington there are some 800 grain warehouses, and in keeping with our state law it falls to the Grain Inspection Service to supervise warehouses.

One of the troublesome problems is that of shrinkage and overages in stored grain. This question of shrinkages is quite clearly and plainly set out in a letter from E. N. Bates, Investigator in Grain Handling, which letter is on file in the office, and statistics covering the subject thoroughly.

With an effort to bring a clear understanding of the Warehouse Act many conferences and hearings have been held with warehousemen and farmers, and much evidence and information has been secured by the department, and on which many helpful rules and regulations have been promulgated, as set out and printed in the Grain and Hay Grade booklet, under date of July 17, 1922, on pages 56 to 66 inclusive, and from the degree of harmony and co-operation that has existed throughout the state with warehousemen the results seem to have had the effect of bringing mutual understanding among the farmers and warehousemen.

REVISED UNITED STATES GRAIN WAREHOUSE ACT.

It should be borne in mind that the United States Grain Warehouse Act is being urged in this state by Mr. H. K. Hollman, Jr., Supervisor of Federal Warehouses, of Washington, D. C., and is being managed by Mr. A. L. Rush, of Portland, Oregon. They are urging on the State of Washington the desirability of having the State of Washington modify its warehouse act to permit the Federal Government to supersede the state grain warehouses act of this state. Any such legislation should be very carefully scrutinized by the legislative body in view of the rapidly encroaching of Federal Government's Supervision Boards in the various departments of the state, and *particularly* because of the added expense to the warehousemen of this state.

An analysis of the United States Warehouse Act will show the following table of expense:

License fee	$ 2.00
Investigation of application for license	5.00
Official audits per year (4) on 100,000 bu. capacity warehouse	100.00
Premium on $5,000.00 bond	50.00
Total	$157.00

This would be the minimum, although Mr. Hollman has stated to the department that the average cost for this class of supervision under the United States Federal Warehouse Act is about $200.00 per warehouse per year. An expense that is disproportionate to public benefits. The state must admit that the supervision it has given has not been as exact as it should have been, but much has been done for the money spent in the warehouse act. No year has the expenditure been more than $17,500.00 on the basis of 800 warehouses in the state, where under the United States Grain Warehouse Act it will cost, figured on the minimum cost per warehouse, $125,600.00.

UNIFORM WAREHOUSE RECEIPT.

As a relic of the past, each warehouseman seems to have his own ideas about a warehouse receipt. Many of these receipts provided for the movement of the grain from the warehouse at which it was received to points even outside of the state, thus moving it from the protection of the warehouseman's bond to the State of Washington, and relieved the holder of the receipt of any protection other than what redress he might have against a warehouseman. If the warehouseman was financially responsible for the value of the wheat the grower, or receipt holder, was not injured, otherwise he stood to loose his entire crop by his having signed a receipt permitting the warehouseman to remove the grain to other storage points should the wheat be lost.

The state realizing the hazardous condition has, after long careful investigation and study, adopted a uniform warehouse receipt and restricted the warehouseman under such rules as will not permit modification or alteration of the receipt. This will add very much protection to the holder of warehouse receipts.

PRIMARY MARKETS.

The efforts of the department have not been entirely that of aiding in producing the wheat crop, but also of aiding and of finding a market, and with this in view, we have encouraged and tried to bring about the establishment of a primary market in the cities of Tacoma, Seattle and Portland, as well as an export market.

The States of Oregon and Washington are a unit on trying to bring about this condition, and are encouraged by the co-operation of grain interests.

On page 29 a report of the grain received in public licensed warehouses is submitted, by counties, for the period July 1, 1920, to June 30, 1921; also a report of the grain received from July 1, 1921, to June 30, 1922.

SHIPPING POINT INSPECTION OF HAY.

Carrying out the wish of the State Legislature expressed in Chapter 144 of the Session Laws of 1921, inspection of hay at shipping point was established.

This being a new state function it naturally required considerable pioneering in working out the inspection service. In passing, this was the first state in the union to establish inspection and grading of hay at shipping point.

The 1921 hay crop was generally of good quality, but it was the lowest priced hay year for many years back, but notwithstanding this, the farmers generally, as well as the dealers, after state inspectors had been established for a few months, were eager for state inspection.

The following table will bear out the above statement that the increase in amount of tonnage inspected was quite pronounced during the movement of the hay crop.

1921.	Tonnage.	Cars.
July	226	17
August	792	60
September	986	69
October	1,359	95
November	5,435	371
December	5,703	411
1922.		
January	6,612	466
February	9,228	642
March	8,441	589
April	3,086	217
May	382	28
	42,250	2,965

To find men qualified to inspect hay is one of the greatest problems the department was confronted with. To begin with, hay inspection is more difficult than most any other commodity known. Yet, out of a force of twenty-one inspectors, it is remarkably interesting to know that out of all re-inspection at terminal markets that the grade was reversed on .00726 of 1% of the total inspection at shipping point. Out of 105 cars on which re-inspection was called for at terminal markets, 41 cars were found to be railroad damaged, and the original grade sustained. Of the other 64 cars the grade was sustained on 30 cars; this leaves 34 cars on which part of the grade was reversed, which reversing in the total was very small in considering the total amount of hay handled. It is quite interesting to know that all new hay inspectors assembled for the first year could make a record so remarkable as was accomplished in the first year's service, where only .00726 of 1% of the tonnage was reversed.

The fee established at shipping point was fixed at 30 cents per ton, but before any great quantity of hay had moved, the fee was reduced to 25 cents. Had all of the hay in the Valley been inspected it is our belief that this figure could still have been reduced at shipping point inspection.

The results of the first year gave us a wide range of knowledge and established that hay inspection can be made self-supporting at 25 cents per ton, or less.

HAY GRADES.

The alfalfa hay growers of this state have not yet been able to agree on a workable alfalfa hay grade.

The department is convinced that the grade established in 1921 was a grade that worked to the advantage of the farmers, inasmuch as it was shown that in the year's tabulation about 60% of the hay offered for market graded Choice, and 37% No. 1, leaving only 3% for all other grades.

In May of 1922, at the request of the State of Oregon, joint hearings on hay grades, first in the State of Oregon, later in Washington, was held, with the view of having a uniform grade in the two states, but the results were not satisfactory. Oregon hay growers and Washington hay growers were almost diametrically opposite in their views of alfalfa hay grades, and because of the great amount of evidence rendered by the hay growers and their insistence on a hay grade carrying their ideas, the two states could not harmonize a uniform grade, and the State of Washington adopted on May 20, 1922, Alfalfa Hay Grades materially different from last year, believing that the producer had a right to have his wishes made into law when his evidence was not out-weighed by the evidence of the consumer and other interested parties. Therefore, the grades that were adopted proved to be not workable and very little hay is moving on the new grades, which means that shipping point inspection for this year will be very greatly reduced, not as a reflection on the service, but because the consumer and the dealer are buying and selling on sample market and not using state grades.

U. S. DEPARTMENT OF AGRICULTURE PROPOSED HAY GRADES.

September 1, 1922, the Federal Government published a Tentative Grade Specification for hay.

These specifications applied to Timothy hay, Clover hay, Mixed hay, Clover and Mixed grass. On receipt of these proposed grades it was advised that any suggestions that the state wished to submit should be in writing and delivered at Washington prior to October 15, 1922.

Because of the importance of the establishment of Federal Hay Grades we again appealed to the four northwest states to hold hearings in their respective states and a joint hearing of the four states in Yakima on October 12, 1922. We think this suggestion was generally carried out in the four states, and the meeting at Yakima was attended by Mr. J. W. Church, Chief Grain Inspector of Oregon. The other two states were not represented. However, the hearings held in both states had proved quite conclusively that the Proposed Tentative Grades were too technical and not applicable to the hay grown in the northwest, with the result the hay interests refused to adopt the grades as they were written, and asked the Secretary of Agriculture at Washington, D. C., to hold public hearings in the northwest. Our request was not granted, but we secured a ruling that the hay grades would not be compulsory in these two states until such a time as ample consideration had been given to satisfy the growers and dealers, or to correct the grades to meet northwest conditions.

ALFALFA MEAL STATE GRADES.

The Grain and Hay Inspection Service has given much thought to the working out of a satisfactory Alfalfa Meal Grade, realizing that not enough of alfalfa meal is being used in this state, and from questionnaires sent out to interested parties it seemed that the quantity of alfalfa meal used was restricted because of state law on rules and grades. The grades not adopted seem to meet with little opposition, and with favorable comment. They are largely in harmony with the alfalfa meal grades used in the State of Kansas and with the alfalfa meal markets of New Orleans. Kansas produces five times as much alfalfa as the State of Washington, and twenty times as much alfalfa meal.

The Pacific Northwest Grain Dealers' Association Schedule of Rules of Sales Contract, Discounts for Mixed Wheat, Discounts for Smutty. Wheat, and Discount Dockages on Test Weight.

The Grain Inspection Service of the States of Washington and Oregon was requested by the grain dealers to attend the annual convention held in Spokane, June 20, 1922, with a view of offering suggestions as to the discounts that might be suggested on the various subjects in report set out.

The representatives of the State of Washington protested at the meeting against the schedule of discounts on smutty wheat. It was then agreed at the meeting that the State Inspection Service make a careful study of the cost of smutting wheat by actual demonstration, doing the work themselves. The industries offered the use of all their facilities and men to do the work gratis. As stated previously in this report, the work is being carried on jointly by the States of Oregon and Washington, assisted by the Federal Bureau of Farm Markets of Portland. Practice of the wheat dealers in setting an arbitrary set of discounts and rules of trade does not meet with general favor in the Grain Department, in that we believe that the practice may be carried to such a point as to destroy competitive markets and form a market in restraint of free and competitive buying and selling, and the legality of such a market is questionable.

SEED WHEAT.

Probably the greatest drought in the wheat belts was experienced in the year 1922, with the result that the wheat sown on the dryer lands were exceedingly badly damaged, and the yield almost a failure in certain portions of Benton, Franklin, Adams, Grant, Lincoln and Douglas Counties.

So severe has been the drought this year that many farmers are unable to buy seed wheat to plant the 1923 crop. In view of this the state has spent a great deal of time and some money in trying to aid the farmer in getting seed, but at this time there are still many farmers who are not supplied with money or wheat seed to plant the fall or spring crop.

The Federal Government makes appropriation for seed wheat. In March, 1922, the Federal Government appropriated a million and a half dollars for seed wheat. This money was used for the purpose of appropriations as set out in the following report:

Office of the Secretary, Farmers' Seed Loan Office, Grand Forks, N. Dakota, July 8, 1922.

FINAL REPORT OF GOVERNMENT SEED LOANS.

Week Ending July 8th			PREVIOUSLY REPORTED TOTALS			
	No.	Amount	Number	Amount	Number	Amount
Idaho	....	....	167	$24,684 50	167	$24,684 50
Montana	7	$560 00	6,547	755,633 29	6,554	756,213 29
North Dakota	9	1,179 50	4,968	660,368 55	4,977	661,548 05
South Dakota	1	90 00	430	37,521 85	431	37,611 85
Washington	....	....	13	1,730 00	13	1,730 00
Totals	17	$1,829 50	12,125	$1,479,958 19	12,142	$1,481,787 69

Memorandum for the:
Officer in Charge,
Farmers' Seed Loan Office.

N. A. OLSEN.
Agronomist in Charge.

This state is now asking the Federal Government to make another appropriation along similar lines to meet distressed conditions in this state.

STATE SEED WHEAT APPROPRIATION.

It might be suggested for the purpose of thought, if not for ultimate enactment into law, that the state could well afford a revolving fund of $100,00.00 to meet emergencies of similar nature for seed wheat.

Had the farmer been able to secure seed at the proper time for seeding this fall it might have meant keeping hundreds of farmers on the farm, and increasing the wheat production of the state millions of bushels in next year's crop.

The farmer asked no charity. He is willing to stick on the job but does need temporary credit.

REPORT OF GRAIN RECEIVED IN PUBLIC LICENSED WAREHOUSES (In bushels) FOR THE PERIODS:

COUNTY	July 1, 1919, to June 30, 1920.				July 1, 1920, to June 30, 1921.				July 1, 1921, to June 30, 1922.			
	Wheat	Oats	Barley	Rye	Wheat	Oats	Barley	Rye	Wheat	Oats	Barley	Rye
Adams	3,340,466	2,702	1,698	3,624	2,924,911	8,317	1,061	2,495	3,434,196	......	231	5,454
Asotin	185,902	......	2,098	......	104,226	......	3,433	......	269,389	......	1,478	......
Benton	161,187	......	203	16,766	167,142	......	......	14,063	374,406	......	......	30,792
Chelan	64,089	289	1,284	2,141	15,967	15	51	263	244,542	494	1,171	79
Columbia	1,736,859	44,708	65,129	......	1,576,725	256,917	......	......	1,804,110	1,175	71,675	......
Douglas	1,084,126	1,551	1,434	500	624,600	105	......	......	2,727,235	2,525	877	2,228
Franklin	889,639	......	......	830	983,618	......	......	5,925	1,168,755	......	......	11,963
Garfield	1,186,089	......	138,096	......	1,589,131	216,671	......	......	1,866,936	24,958	93,718	......
Grant	1,532,457	30,900	180	27,379	566,756	10,605	2,782	4,531	1,660,999	20,384	422	51,552
Kittitas	51,937	......	1,248	......	91,473	7,007	4,350	......	170,456	6,254	8,587	......
Klickitat	895,562	1,994	5,860	4,260	636,922	858	4,642	11	934,749	......	2,829	4,336
Lewis	......	......	......	......	......	......	......	......	10,000	20,000	1,000	......
Lincoln	4,422,184	24,598	96,697	1,141	2,471,423	11,145	42,550	442	5,251,256	14,515	76,641	178
Okanogan	169,860	5,415	4,106	......	55,408	7,090	641	500	479,110	33,689	7,218	38,705
Skamania	......	......	......	......	......	......	......	......	......	......	......	......
Spokane	2,233,093	336,532	30,829	489	1,668,402	118,543	24,188	480	2,610,560	154,234	16,396	1,250
Stevens	......	......	......	......	......	......	......	......	18,250	......	......	......
Walla Walla	3,338,532	727,903	120,319	2,278	2,907,286	1,361	56,492	62	7,807,809	195	82,743	1,396
Whitman	8,198,449	2,608	223,941	2,615	9,285,273	571,016	195,070	494	11,180,284	354,941	138,045	2,055
Yakima	235,795	......	21,816	486	265,111	17,694	32,837	3,499	322,906	11,134	32,061	3,839
Total Bushels	29,726,235	1,179,200	714,937	62,509	25,934,374	1,227,344	368,106	32,765	42,335,948	644,498	535,087	153,827

	YAKIMA	TACOMA		SEATTLE		SPOKANE		EVERETT		TOTAL INSPECTION		OUT INSPECTION	
	Hay	Grain	Hay	Grain	Hay	Grain	Hay	Grain	Hay	Grain	Hay	Tacoma	Seattle
June 8, 1911, to Dec. 31, 1911	....	191,280	9,625	139,306	7,727	23,908	7,970	....	....	354,503	25,322	2,840	3,653
1912	....	317,271	19,519	239,581	10,748	36,794	12,168	10,900	4,130	604,546	46,565	2,881	1,670
1913	....	286,854	22,116	306,572	9,530	45,359	12,943	13,320	5,253	652,105	49,842	....	....
1914	....	330,511	22,048	328,119	9,496	42,634	11,711	7,749	2,545	709,013	45,799	....	....
1915	....	287,691	13,851	363,381	16,524	36,844	13,496	5,662	3,034	693,578	46,905	15,318	....
1916	....	218,797	15,217	286,940	27,933	456,607	8,994	4,630	3,396	966,974	55,530	30,792	....
1917	....	248,332	11,774	265,733	20,202	177,777	10,636	1,571	763	693,413	43,375	37,220	24,261
1918	....	258,732	8,131	326,912	14,274	110,289	11,766	982	248	696,915	34,419	16,233	18,721
1919	....	220,066	6,267	274,990	5,407	91,790	13,037	3,957	325	590,803	25,036	64,787	56,481
Jan. 1, 1920, to Oct. 31, 1920	....	265,982	4,811	260,779	2,840	99,036	7,163	16,831	57	642,628	14,871	42,411	44,982
Oct. 31, 1920, to Oct. 31, 1922	42,407	664,420	10,184	687,548	7,557	174,188	20,412	32,926	....	1,550,062	80,560	257,217	177,582
Totals	42,407	3,289,945	143,543	3,479,951	132,237	1,295,226	130,296	98,528	....	8,163,650	468,224	521,149	327,353

Wheat exported, Oct. 31, 1920, to Oct. 31, 1922, 14,493,300 bushels.
Flour exported, Jan. 1, 1921, to October 31, 1922, 5,763,243 barrels, equivalent to 23,052,972 bushels of wheat.

TABLE NO. 5—Showing Number of Cars of Grain and Hay Received at Tacoma, Seattle, Spokane, Everett and Yakima from 1911 to October 31, 1922.

	TACOMA							SEATTLE						
	Wheat	Oats	Barley	Corn	Rye	Hay	Total	Wheat	Oats	Barley	Corn	Rye	Hay	Total
1911	9,853	604	290	242	7	2,266	13,262	5,831	1,128	561	423	33	4,812	12,788
1912	12,106	576	427	243	10	3,453	16,815	7,568	1,176	817	435	47	5,786	15,779
1913	9,794	520	786	225	17	2,813	14,155	7,351	1,528	1,069	430	29	5,672	16,049
1914	9,954	561	805	126	21	3,232	14,699	7,565	1,348	1,450	174	34	5,029	15,600
1915	7,594	580	661	204	17	2,287	11,343	8,732	1,166	1,428	155	17	4,503	16,001
1916	6,184	420	249	153	22	2,319	9,347	5,462	1,456	544	286	29	4,357	12,154
1917	6,511	282	78	112	9	2,024	9,016	5,251	1,233	297	234	28	3,912	10,955
1918	6,822	262	68	204	25	1,477	8,358	5,762	948	197	514	61	2,940	10,422
1919	5,415	216	94	143	7	938	6,813	5,117	632	243	238	19	1,445	7,694
January 1, 1920, to October 31, 1920	6,237	129	81	149	8	684	7,288	5,470	342	207	432	13	1,289	7,753
October 31, 1920, to October 31, 1922	15,740	289	131	643	25	1,678	18,606	14,777	1,213	304	2,024	97	3,102	21,517
Totals	95,710	4,539	3,670	2,444	168	23,171	129,702	78,906	12,170	7,067	5,345	407	42,707	146,712

TABLE NO. 5—Showing Number of Cars of Grain and Hay Received at Tacoma, Seattle, Spokane, Everett and Yakima from 1911 to October 31, 1922—Continued.

YEAR	SPOKANE							EVERETT			YAKIMA
	Wheat	Oats	Barley	Corn	Rye	Hay	Total	Grain	Hay	Total	Hay
1911	682	384	105	50	5	1,281	2,507	......	......	......	....
1912	773	341	66	35	5	984	2,204	272	413	685	....
1913	1,212	304	64	32	3	970	2,585	330	525	855	....
1914	1,448	377	152	38	10	945	2,970	200	255	455	....
1915	1,381	328	104	65	11	1,303	3,192	142	303	445	....
1916	7,707	313	181	18	2	795	9,016	116	339	455	....
1917	4,905	421	83	32	4	1,296	6,741	40	76	116	....
1918	2,501	382	93	112	9	1,314	4,411	25	25	50	....
1919	2,219	118	63	88	2	1,307	3,797	100	33	133	....
January 1, 1920, to October 31, 1920	2,139	219	35	215	4	711	3,323	421	6	427	....
October 31, 1920, to October 31, 1922	3,967	674	111	808	11	2,116	7,687	*823	......	823	†2,977
Totals	28,934	3,861	1,057	1,493	66	13,022	48,483	2,469	1,975	4,444	2,977

* Inspection closed April 1, 1922.

† Inspection commenced July 1, 1921.

TABLE NO. 2—Financial Statement of Grain Department from April 1st, 1921, to October 31st, 1922, Showing Amounts of Fees Received and Disbursed Monthly at the Various Inspection Points.

	RECEIPTS							DISBURSEMENTS						
	General	Yakima	Everett	Spokane	Seattle	Tacoma	Total	Total	Tacoma	Seattle	Spokane	Everett	Yakima	General
1921—														
April........	$116 25	....	$172 50	$317 65	$1,225 70	$1,381 64	$3,218 74	$3,460 54	$1,139 50	$1,186 04	$335 00	$150 00	....	$350 00
May.........	112 25	....	172 50	231 95	908 30	1,606 60	3,081 60	4,284 49	1,423 25	1,469 84	719 37	150 00	....	522 03
June.........	154 00	....	....	398 85	1,156 15	1,241 80	2,949 80	3,025 20	1,046 22	980 29	507 45	....	....	491 24
July.........	761 00	....	....	452 10	1,227 00	1,653 20	4,093 30	3,638 07	1,187 73	1,328 03	480 50	....	$301 45	340 36
August.....	465 36	$305 40	17 75	1,214 77	2,187 98	4,761 05	8,952 31	6,393 71	2,605 05	1,606 36	607 76	7 43	561 06	1,005 45
September...	191 00	295 80	285 05	1,372 95	4,912 17	8,023 44	15,080 41	8,392 08	3,703 05	2,381 36	520 00	164 52	523 11	1,009 90
October.....	52 00	407 70	238 80	1,021 70	5,165 67	5,957 66	12,843 53	10,436 86	4,209 10	3,877 03	766 32	160 58	772 66	591 17
November...	26 00	1,401 35	174 95	764 00	2,796 83	3,370 15	8,533 28	7,799 35	2,775 71	2,683 20	596 55	150 00	1,208 75	385 14
December....	6 00	1,425 75	294 50	572 86	3,712 70	3,888 00	9,899 81	7,249 91	2,208 10	2,315 55	508 16	150 00	1,720 10	348 00
1922—														
January.....	....	1,653 00	172 80	572 95	5,234 50	3,856 20	10,489 45	8,105 58	2,679 75	2,758 14	498 18	151 74	1,588 33	434 44
February....	2 00	2,307 00	27 90	636 42	2,342 13	3,438 78	8,754 23	7,579 97	2,379 57	1,934 99	628 58	150 00	2,060 07	406 74
March.......	....	2,110 25	172 50	775 50	2,153 42	2,545 80	7,757 47	6,166 47	1,814 92	1,947 61	452 61	150 00	1,322 40	478 93
April........	....	771 50	....	401 75	1,526 48	1,876 94	4,576 67	4,474 78	1,523 98	1,423 63	471 21	....	558 15	517 81
May.........	....	94 75	....	536 75	1,693 68	1,459 25	3,784 43	3,962 83	1,385 50	1,426 24	568 53	63	107 45	474 48
June.........	....	....	....	258 10	2,491 23	1,099 45	3,848 78	4,227 24	1,213 94	1,934 69	435 20	....	....	643 41
July.........	639 00	....	....	272 70	1,518 10	1,449 30	3,879 10	4,235 53	1,306 65	1,762 54	488 28	....	....	678 06
August.....	368 00	....	....	643 30	1,842 75	2,472 62	5,326 67	4,996 91	1,800 17	1,895 32	461 16	....	....	840 26
September...	170 00	5 00	....	1,119 50	4,775 30	3,828 20	9,898 00	9,040 89	2,955 67	3,355 69	628 46	....	....	2,101 07
October.....	162 00	34 25	....	1,277 85	5,550 85	3,650 53	10,675 48	8,752 66	2,464 70	3,574 20	605 73	....	31 40	2,076 03
Total....	$3,224 86	$10,811 75	$1,720 25	$12,841 65	$51,419 94	$57,560 61	$137,588 03	$116,223 02	$39,883 18	$39,840 75	$10,574 05	$1,384 90	$10,754 93	$13,785 21
Total surplus from April 1, 1921, to October 31, 1922..........								21,365 04						
								$137,588 06						

The grain and hay inspection has been supported entirely by fees collected for services rendered to that industry. There was no Legislative appropriation from the General Fund.

FARM MARKETING.

Beriah Brown, Assistant Supervisor.

By a provision of the Administrative Code, it became the duty of the Director of Agriculture "to exercise all of the powers and perform all of the duties now vested in and required to be performed by the Director of Farm Marketing." On June 1, 1921, that work was taken over by this department.

However, before the passage of that act and indeed for many years past, the more important of the aids which it is possible for the state to lend toward the improvement of farm marketing methods, were already being applied by the several divisions of the Department of Agriculture, and but little was added to the real duties and responsibilities of this department by the legislative change. The work of rendering direct aid to farm marketing being clearly administrative rather than educational, naturally it belongs properly to the administrative branch, a rule which is followed in other states and now applied here.

The larger work in aid of farm marketing in this state and in other states, although few have advanced as far in these directions as has Washington in legislation or in administration, is in the establishing of grades for fruits, vegetables, grains and other farm products, in standardizing containers, in inspection and certifying of products at shipping points and packing plants, in keeping diseased or infected farm products off the market, in protecting against frauds or misbranding; in inspecting weights and measures, in inspection of all places where foods, feeds or drugs are sold and seeing that they are kept in sanitary condition. There is also inspection and close supervision of all places where milk products are manufactured, requiring the employment of licensed and qualified testers, to insure that the farmer gets a square deal when he sells his milk on the butter fat basis and other services of a like character, all tending to raise the quality of Washington farm products, get them to market in the most attractive form and insure that the farmer receives the highest market price for his product which comes up to the grades and conforms to the standards. As a rule, the Washington farmer whose product is standardized, graded, packed, inspected and certified, does get the highest price, both in local markets and in the markets of other states.

All of these services have been in the past and will continue in the future to be rendered by other divisions of the Department of Agriculture. They are, however, farm marketing services of the highest possible value, the best that the state can render to the farmer. This leaves to the sub-division "Farm Marketing" but two subjects with which to deal directly; the duties imposed by the Co-operative Marketing Act, in rendering advice and assistance and in supervising the operations of corporations organized under that law, for one thing; and in the collecting and distributing of market news for the other.

Since the Co-operative Marketing Act went into effect, the department has given its advice and rendered its assistance when requested, in the organization or the reorganization of sixteen different corporations under the provisions of the Co-operative Marketing Act, as follows:

Washington Wheat Growers' Association.
Washington Co-operative Egg and Poultry Association. (Reorganization not fully completed.)
North Pacific Co-operative Berry Growers, Seattle, Wash.
Seattle Milk Shippers' Association, Maynard Building, Seattle.
Otis Orchards Apple Company, Otis Orchards.
Wenatchee District Co-operative Association, Wenatchee.
Skagit Valley Seed Growers' Association, Mt. Vernon.
Yakima Dairymen's Association, Yakima.
Okanogan Valley Growers' Co-operative Association, Oroville.
Farmers' Warehouse and Commission Co. of Bickleton, Bickleton.
Grays Harbor Egg Association, Aberdeen.
Three Rivers Growers' Association, Kennewick.
Yakima Valley Producers' Association, Wapato.
North River Dairymen's Association, Cosmopolis.
Benton City Growers' Association, Benton City.
Washington Feed Association, Tacoma.

There are several other associations in process of formation, with the movers in which the department keeps in touch, ready to render any assistance which may be requested of it. In connection with this work, the department has prepared advisory forms of contracts, etc., for the use of those organizing such co-operative associations.

On each of the several corporations listed above, the department has appointed a resident director, in most instances a business man of character and standing, who has been willing to place his business experience at the service of the association, because of interest in its success and in the welfare of the individual members. Such directors, with their business training, will steer new associations clear of many of the mistakes which have crippled co-operative associations in the past. These appointed directors keep the department informed from time to time of the progress of each association. Annual financial reports of the associations are filed in this office. In the case of the larger of these associations, the books are audited annually by the state department of taxation and examination and a copy of the auditor's report deposited in this office. The major portion of these corporations are yet within the first year of their operation under the provisions of the new law, so that but few of them have yet made their annual financial reports.

According to the reports received from the appointive directors, the affairs of each of the associations have thus far proceeded smoothly and to the general satisfaction of the members, with evidence that they will be successful in their field. Among those which have reorganized under the new law, after operating under former laws, are several which have grown to large proportions and which do business in terms of millions of dollars annually. The success which has attended their operations in the past is sound warrant for the belief that they will be equally successful in the future or even more so. They have demonstrated the soundness of the principles upon which co-operative marketing associations of farmers are based, and the success which has attended them is fair warrant for the assumption that the newer associations will be equally successful in their field. Some are already great and permanent business institutions; the others may be such in time.

Little has thus far been done in the direction of collecting and distributing of market news. The Bulletin, previously published by the former Director of Farm Marketing, had been discontinued some months before the duties of the office were transferred to this department. Among the records transmitted to this department by the State College there were returns from questionnaires submitted to the readers of the Bulletin, from which it appeared that a substantial majority of the readers reported that it was of no value whatever to them. In that view of the case there was hardly legitimate excuse for making the expenditure necessary for the printing of the Bulletin, so it has been permitted "to stay dead." The only practicable method of securing and distributing farm marketing news is through collaboration between the state and the federal authorities, the latter of whom have a nation-wide machine for the purpose, a machine, however, which does not reach the big primary markets on this state.

This department has been at different times in communication with the Federal Department of Agriculture asking for its co-operation in establishing a market news service from Seattle or Tacoma, the larger primary markets of this state; but so far nothing concrete has resulted. It is the understanding, however, that such a service may be established some time in the near future, especially if Congress acts affirmatively on some measures now before it.

When this is done, it is the purpose of this department, if funds are available, to co-operate with the federal authorities in broadcasting farm marketing news daily from the coast markets. When this service is established, it will be comparatively easy for every farmer who desires it to get in daily touch with the primary markets, either by putting in a receiving set of his own or joining with his neighbors in putting in a set for their common use.

DAIRY AND LIVESTOCK DIVISION.

Hon. E. L. French,
Director of Agriculture,
Olympia, Washington.

Sir: I have the honor to submit herewith the report of the activities of the Division of Dairy and Livestock for the biennium ending June 30, 1922.

Since the inauguration of the Administrative Code the work of this division has greatly increased and considerable of it has been of such a nature that it could not be tabulated, consequently does not appear in this report.

The co-operative agreement with the Bureau of Animal Industry for the eradication of tuberculosis has been of great value to the dairymen and stockmen. The amount of work that can be done is contingent upon the appropriation for indemnity and operating expenses made available by the Legislature.

At the close of the biennium a second co-operative agreement was made for the investigation of Hog Cholera and its allied diseases. This will be of special interest to swine breeders and feeders, as we are now in a position to render them valuable service.

The dairy work as carried on by this division has been a big factor in the dairy industry of this state, in that it is directed along the lines of producing a better quality of milk and cream on the farm and thereafter having supervision over the manufacture of the finished product. The canned milk and other dairy products of this state have an enviable reputation throughout the entire United States and foreign countries.

The work of the division has increased 50 per cent over that of the previous biennium, and it will be necessary to increase the force of inspectors in order to care for the ever-increasing requests for this service.

REPORT OF DAIRY INSPECTORS.

July 1, 1920, to June 30, 1922.

G. G. Carman, July 1, 1920, to June 30, 1922.
A. D. Fish, July 1, 1920, to June 30, 1922.
L. W. Hanson, July 1, 1920, to June 30, 1922.
G. M. Hinman, August 1, 1920, to June 30, 1922.
O. C. Van Houten, July 1, 1920, to June 30, 1922.

Dairy Inspections	6,672
Creamery Inspections	1,122
Store and Depot Inspections	3,414
Cheese Factory Inspections	82
Condensed Milk Factory Inspections	272
*Samples of Milk for Butter Fat	3,156
*Samples of Cream for Butter Fat	3,576
*Samples of Ice Cream	73
*Samples of Cheese	58
*Samples of Butter	322
*Samples for Bacteriological, Sediment and Chemical Examination	14,659
Milk Cans Inspected	23,843
Cans Milk Inspected	64,574
Cans Cream Inspected	20,304

Milk Cans Condemned	159
Cans Milk Condemned	1,006
Cans Cream Condemned	391
Cans Returned to Owner	859
Wagons Inspected	611
Milk Trains or Trucks Inspected	393
Complaints Answered	253
Orders Issued	6,503
Re-inspections	1,888
Dairies, Creameries, Stores, Depots, Factories Closed	177
Milk Vendors' Licenses Collected	845
Factory Licenses Collected	102
Babcock Testers Applicants Examined	420
Babcock Testers Licenses Collected	276
Babcock Testers Permits Issued	207
Babcock Testers Applicants Failed	62
Complaints Filed	87
Number of Convictions	71
Amount of Fines	$904 75

*All samples taken were submitted to Dr. C. W. Johnson and Professor George Olson, Department Chemists, for analysis.

REPORTED BUTTER PRODUCTION FOR YEAR 1920.

COUNTY	Pounds of Butterfat Produced	Pounds of Creamery Butter Manufactured	Value of Butter
Adams	10,131	6,120	$3,672 00
Benton	141,133	175,700	110,691 00
Chelan	110,744	128,804	84,922 00
Clallam	561,175	720,124	412,846 00
Clarke	1,260,522	1,383,354	781,577 00
Columbia	22,441	25,863	14,552 00
Cowlitz	252,535	305,948	151,189 00
Ferry	197,066	246,125	122,206 00
Grays Harbor	196,649	274,144	160,799 00
Island	49,000	59,558	37,534 00
Jefferson	158,164	175,577	99,849 00
King	1,385,930	8,758,408	5,175,471 00
Kitsap	152,453	166,974	90,538 00
Kittitas	255,149	311,166	176,059 00
Klickitat	56,459	69,735	38,712 00
Lewis	536,569	575,118	321,097 00
Mason	35,053	43,516	21,410 00
Okanogan	420,777	516,388	285,079 00
Pend Oreille	64,162	75,567	45,205 00
Pierce	1,563,505	1,497,431	840,356 00
San Juan	55,603	68,640	36,025 00
Skagit	239,405	295,399	175,686 00
Skamania	11,958	14,377	8,000 00
Snohomish	934,528	1,091,930	625,821 00
Spokane	2,573,861	2,725,012	1,540,448 00
Stevens	202,205	247,164	137,615 00
Thurston	183,371	224,140	137,615 00
Wahkiakum	428,903	525,656	281,866 00
Walla Walla	200,146	519,768	298,654 00
Whatcom	1,245,954	2,035,986	1,147,800 00
Whitman	84,775	86,461	54,825 00
Yakima	638,495	963,099	524,516 00
Totals	14,228,833	24,313,252	$13,960,736 00

CONDENSED MILK PRODUCED IN STATE, AS REPORTED, DURING YEAR 1920

Pounds	81,474,120
Value	$8,346,277

VALUE OF BY-PRODUCTS PRODUCED IN STATE DURING YEAR 1920.

$2,686,700 00

CHEESE REPORTED MANUFACTURED DURING YEAR 1920.

COUNTIES	Pounds Full Cream American Cheese	Value	Pounds Cottage Cheese	Value	Pounds Other Varieties Cheese	Value
Clarke	103,997	$29,242 00	......	......	......	......
Cowlitz	211,078	63,323 00	......	......	......	......
Grays Harbor	447,832	119,091 00	20,400	$2,040 00	......	......
Jefferson	30,140	7,528 00	......	......	......	......
King	7,500	2,500 00	151,067	19,815 00	......	......
Lewis	269,691	71,527 00	2,500	250 00	......	......
Okanogan	......	......	160	10 00	......	......
Pacific	178,985	45,000 00	......	......	103,000	$26,000 00
Pend Oreille	......	......	700	105 00	......	......
Pierce	......	......	91,185	9,100 00	81,347	22,774 00
Skagit	......	......	200	30 00	48,268	12,166 00
Snohomish	120,246	30,972 00	12,000	- 1,200 00	......	......
Spokane	......	......	51,184	4,983 00	......	......
Thurston	......	......	2,455	368 00	......	......
Walla Walla	2,908	870 00	......	......	......	......
Whitman	1,262	298 00	580	87 00	......	......
Yakima	95,282	28,584 00	......	......	2,977	952 00
Out of State	......	......	......	......	......	......
Totals	1,468,916	$398,935 00	332,431	$37,988 00	235,592	$61,892 00

ICE CREAM REPORTED MANUFACTURED DURING YEAR 1920.

COUNTY	Gallons	Value
Adams	4,532	$6,344 00
Chelan	69,164	89,555 00
Clallam	5,000	6,500 00
Clarke	41,475	38,183 00
Columbia	9,060	12,150 00
Cowlitz	615	615 00
Ferry	3,586	3,578 00
Grays Harbor	91,500	114,362 00
Jefferson	2,966	4,029 00
King	827,806	1,088,984 00
Kitsap	81,251	98,727 00
Kittitas	28,675	37,277 00
Lewis	26,000	26,500 00
Lincoln	40	50 00
Okanogan	7,054	8,552 00
Pacific	5,734	7,000 00
Pend Oreille	3,534	5,123 00
Pierce	220,638	283,684 00
Skagit	24,418	21,975 00
Snohomish	94,625	97,094 00
Spokane	339,760	520,420 00
Stevens	12,370	11,633 00
Thurston	33,398	42,758 00
Walla Walla	18,746	25,485 00
Whatcom	83,968	104,890 00
Whitman	13,866	19,612 00
Yakima	64,978	87,009 00
Totals	2,114,833	$2,712,089 00

REPORTED RECEIPTS OF MILK AND CREAM FOR YEAR 1920.

COUNTY	Pounds of Milk Produced	Gallons of Whole Milk Sold	Value of Whole Milk Sold	Gallons of Skimmed Milk Sold	Value of Skimmed Milk Sold	Gallons of Sweet Cream Sold	Value of Sweet Cream Sold
Adams	132,437	15,551	$8,326 00	....	....	177	$347 00
Asotin	27,840	3,270	1,815 00	....	....	....	....
Benton	272,382	29,760	15,782 00	1,000	$100 00	1,172	2,170 00
Chelan	678,860	84,323	37,018 00	....	....	5,338	10,986 00
Clallam	806,850	91,500	51,720 00	1,800	315 00	80	160 00
Clarke	3,116,297	329,199	138,515 00	19,089	1,166 00	8,372	17,918 00
Columbia	199,256	21,922	11,375 00	....	....	1,120	3,497 00
Cowlitz	2,362,388	31,450	12,580 00	200	20 00	50	120 00
Douglas	38,400	4,800	1,940 00	....	....	....	....
Ferry	40,720	5,190	2,571 00	....	....	283	680 00
Franklin	350,832	43,697	22,371 00	....	....	397	876 00
Garfield	58,560	7,320	4,392 00	....	....	15	48 00
Grant	213,480	25,225	10,159 00	....	....	115	224 00
Grays Harbor	5,812,990	714,525	337,535 00	52,893	8,389 00	19,933	46,477 00
Jefferson	1,652,988	97,658	22,593 00	30,035	633 00	708	1,814 00
King	347,930,198	8,542,129	3,488,704 00	394,485	56,736 00	971,972	1,972,345 00
Kitsap	4,149,116	412,954	194,043 00	29,352	2,935 00	29,437	48,158 00
Kittitas	594,626	66,805	30,157 00	450	45 00	1,747	2,468 00
Klickitat	101,856	12,522	6,263 00	525	92 00	205	610 00
Lewis	4,811,272	191,195	82,632 00	20,310	769 00	7,390	16,008 00
Lincoln	147,994	20,598	7,446 00	300	45 00	369	721 00
Mason	56,000	5,000	2,500 00	....	....	57	75 00
Okanogan	180,604	19,840	9,547 00	375	37 00	920	2,147 00
Pacific	3,820,118	63,530	26,789 00	....	....	....	....
Pend Oreille	66,155	6,643	3,045 00	....	....	239	575 00
Pierce	20,266,107	1,887,418	885,264 00	100,876	5,661 00	73,857	159,682 00
Skagit	4,467,393	104,717	43,256 00	27,867	2,786 00	6,081	13,856 00
Skamania	38,648	4,831	2,519 00	....	....	25	66 00
Snohomish	11,317,662	745,429	344,337 00	15,786	1,237 00	33,409	63,755 00
Spokane	25,490,493	2,005,890	1,011,245 00	188,419	34,781 00	235,734	438,712 00
Stevens	46,504	45,092	19,028 00	400	60 00	3,871	1,680 00
Thurston	2,041,759	163,659	80,865 00	724	66 00	12,936	25,293 00
Walla Walla	1,397,131	83,968	36,937 00	930	139 00	7,958	15,105 00
Whatcom	29,368,237	428,888	151,424 00	58,886	1,500 00	73,670	128,189 00
Whitman	1,236,963	102,278	57,699 00	8,640	1,379 00	5,092	12,529 00
Yakima	7,273,992	355,718	151,175 00	32,130	2,613 00	30,652	55,118 00
Out of State	4,197,041	....	....	....	....	....	....
Totals	474,764,169	16,773,994	$7,313,594 00	985,472	$121,504 00	1,533,370	$3,042,359 00

REPORTED BUTTER PRODUCTION FOR YEAR 1921.

COUNTY	Pounds of Butterfat Produced	Pounds of Creamery Butter Manufactured	Value of Butter
Adams	6,866	300	$90 00
Benton	116,485	142,112	60,950 00
Chelan	120,933	64,578	25,831 00
Clallam	670,032	475,505	188,813 00
Clarke	992,830	1,202,286	477,667 00
Columbia	26,630	34,141	13,076 00
Cowlitz	351,439	377,340	156,541 00
Ferry	169,071	211,857	74,984 00
Franklin	7,987	....	....
Garfield	293	....	....
Grant	436	....	....
Grays Harbor	344,125	375,019	154,965 00
Island	195,883	259,633	97,202 00
Jefferson	51,528	53,971	24,019 00
King	5,456,370	6,646,633	2,582,940 00
Kitsap	102,266	160,350	68,399 00
Kittitas	302,377	371,562	139,120 00
Klickitat	1,460	....	....
Lewis	611,204	1,495,254	567,508 00
Lincoln	606	....	....
Mason	37,786	47,533	18,062 00
Okanogan	351,168	396,517	155,150 00
Pacific	12,160	18,000	7,500 00
Pend Oreille	67,225	76,305	27,000 00
Pierce	1,603,588	1,538,589	606,565 00
San Juan	227,484	128,581	46,082 00
Skagit	885,317	440,900	224,588 00
Skamania	26,375	30,715	10,750 00
Snohomish	873,604	1,052,686	405,943 00
Spokane	2,423,752	3,576,266	1,323,236 00
Stevens	219,388	260,503	106,059 00
Thurston	162,303	199,106	68,558 00
Wahkiakum	315,911	389,882	146,997 00
Walla Walla	594,147	661,130	282,815 00
Whatcom	2,152,965	2,658,467	1,069,951 00
Whitman	48,844	46,980	21,063 00
Yakima	813,876	857,809	347,222 00
Out of State	573,554	....	....
Totals	20,418,268	24,250,460	$9,499,646 00

CONDENSED MILK REPORTED MANUFACTURED IN STATE DURING YEAR OF 1921.

Pounds	90,107,365
Value	$8,296,544 00

VALUE OF BY-PRODUCTS PRODUCED IN STATE DURING YEAR 1921.

$1,146,698.00.

CHEESE REPORTED MANUFACTURED DURING YEAR 1921.

COUNTY	Pounds of Full Cream American Cheese Manufactured	Value	Pounds of Other Varieties of Cheese	Value	Pounds of Skimmed Milk American Cheese	Value
Clarke	149,659	$29,032	....	....	....	....
Cowlitz	374,688	79,180	....	....	....	....
Grays Harbor	588,374	114,690	....	....	....	....
Kitsap	10,702	2,354	....	....	....	....
Lewis	441,571	87,939	....	....	....	....
Pacific	139,643	28,081	135,300	$33,000	....	....
Pierce	....	....	113,069	22,698	....	....
Skagit	240,499	44,504	....	....	....	....
Spokane	....	....	....	....	9,963	$697 00
Yakima	204,337	44,660	....	....	....	....
Out of State	17,556	....	....	....	....	....
Totals	2,167,029	$430,440	248,369	$55,689	9,963	$697 00

ICE CREAM REPORTED MANUFACTURED DURING YEAR 1921.

COUNTY	Gallons	Value
Adams	2,700	$3,780 00
Benton	3,212	3,362 00
Chelan	47,321	47,799 00
Clallam	5,000	6,500 00
Clarke	47,207	56,892 00
Columbia	8,730	10,535 00
Cowlitz	1,575	1,575 00
Ferry	1,600	1,295 00
Franklin	3,154	3,784 00
Grays Harbor	91,005	109,527 00
Island	150	201 00
Jefferson	6,719	9,072 00
King	614,140	684,718 00
Kitsap	54,652	68,207 00
Kittitas	24,193	26,200 00
Lewis	20,000	20,100 00
Okanogan	8,256	10,336 00
Pacific	4,990	5,450 00
Pend Oreille	4,629	6,059 00
Pierce	295,158	341,316 00
Skagit	240,499	44,504 00
Skamania	775	852 00
Snohomish	46,023	38,027 00
Spokane	316,038	409,356 00
Stevens	8,722	10,937 00
Thurston	25,854	33,062 00
Walla Walla	47,904	48,007 00
Whatcom	65,019	73,803 00
Whitman	8,535	11,084 00
Yakima	60,449	66,045 00
Out of State	....	....
Total	2,063,552	$2,152,405 00

REPORTED RECEIPTS OF MILK AND CREAM FOR YEAR 1921.

COUNTY	Pounds of Milk Produced	Gallons of Milk Sold	Value of Milk Sold	Gallons of Skimmed Milk Sold	Value of Skimmed Milk Sold	Gallons of Cream Sold	Value of Cream Sold
Adams	34,032	4,254	$1,701 00	...	...	25	$60 00
Benton	262,224	20,538	8,673 00	...	...	504	1,124 00
Chelan	809,780	107,938	48,830 00	...	...	6,996	13,611 00
Clallam	930,750	91,300	43,900 00	...	...	4,405	9,170 00
Clarke	4,160,553	230,409	101,812 00	16,140	$1,614 00	5,458	9,584 00
Columbia	250,048	32,452	13,501 00	...	...	505	592 00
Cowlitz	3,944,053	52,656	17,137 00	1,825	168 00	186	370 00
Douglas	8,768	1,096	602 00	...	...	...	...
Ferry	56,648	6,680	2,872 00	400	80 00	424	880 00
Franklin	1,209,592	46,036	21,028 00	...	...	3,165	6,443 00
Garfield	222,256	24,538	12,361 00	198	29 00	209	594 00
Grant	86,600	9,825	4,220 00	...	...	218	293 00
Grays Harbor	16,587,119	764,991	282,746 00	34,225	5,872 00	31,369	73,226 00
Jefferson	657,531	81,826	29,434 00	...	...	2,200	4,072 00
King	281,007,518	4,584,981	1,737,463 00	192,917	14,969 00	350,608	600,592 00
Kitsap	4,705,214	361,415	133,484 00	62,808	3,161 00	17,514	29,386 00
Kittitas	973,360	97,095	39,974 00	...	...	2,187	4,548 00
Klickitat	107,880	13,485	4,771 00	1,825	273 00	990	1,914 00
Lewis	25,114,071	282,229	117,806 00	93,420	1,063 00	7,567	17,685 00
Lincoln	460,732	53,908	23,419 00	802	123 00	925	1,856 00
Mason	3,600	480	191 00	...	...	...	...
Okanogan	358,781	18,630	7,980 00	550	82 00	1,442	2,967 00
Pacific	3,555,587	101,700	39,856 00	900	90 00	490	1,112 00
Pend Oreille	183,838	18,469	8,651 00	...	...	330	845 00
Pierce	22,377,624	1,829,154	743,506 00	153,151	11,961 00	91,068	178,260 00
Skagit	10,827,550	195,961	68,835 00	482,680	1,339 00	7,076	14,402 00
Skamania	30,112	4,015	2,007 00	...	...	20	40 00
Snohomish	9,166,035	701,287	319,462 00	13,586	898 00	6,377	15,728 00
Spokane	32,830,133	2,579,075	1,216,217 00	73,192	12,342 00	232,264	424,514 00
Stevens	492,856	51,167	20,158 00	...	...	2,426	4,348 00
Thurston	3,117,130	217,353	93,609 00	4,545	5,339 00	11,898	18,691 00
Walla Walla	2,436,469	271,470	101,564 00	5,500	550 00	16,691	30,883 00
Whatcom	35,465,764	441,028	137,500 00	...	...	122,785	162,397 00
Whitman	1,504,885	160,644	65,561 00	8,341	570 00	5,701	11,331 00
Yakima	11,732,779	263,385	85,960 00	14,020	1,878 00	21,744	29,725 00
Out of State	4,844,788	...	...	...	...	...	...
Totals	480,576,654	13,727,470	$5,556,786 00	1,150,625	$62,306 00	955,776	$1,671,247 00

Revised lists of Creameries, Condenseries, Cheese Factories and Ice Cream Plants will be furnished upon request to this department.

Names, locations and marks of ownership of firms operating under chapter 101, Laws 1915, being an act relating to the registration of marks upon cans and tubs used in transporting dairy products:

	NAME AND LOCATION.	BRAND.
1.	Olympic Ice Cream Company, Tacoma	Olympic Ice Cream, Tacoma.
2.	Dungeness Co-operative Creamery Co., Sequim	D. C. C. Co.
3.	Bremerton Creamery & Produce Co., Inc., Bremerton	Bremerton Creamery, Pasteurized Milk and Cream.
4.	The Bradner Company, Seattle	Brass band marked "Bradner."
6.	Purity Milk Products & Refrigerating Co., Centralia	Purity.
7.	Hazelwood Company, Ltd., Spokane	Hazelwood.
8.	Swift & Company, Seattle	Top red, bottom yellow, handles and sides natural color.
9.	Commercial Creamery Co., Spokane	Planchard.
10.	Turner & Pease Co., Seattle	T. & P. Co., Seattle.
11.	A. Kristoferson, Inc., Seattle	Kristoferson.
12.	Pleasant Hill Dairy, Wenatchee	Pleasant Hill Dairy.
13.	Pine Creek Dairy Co., Spokane	P. C. D.
14.	The Royal Dairy Company, Bellingham	R. D. Co.
15.	Hollywood Farm, Seattle	"H" and "F" interlocked.
16.	Cowlitz Valley Creamery, Castle Rock	C. V. C.
17.	Montesano Creamery Co., Montesano	M. C.
18.	The Mutual Creamery Co., Seattle	Mutual Creamery Company, Jensen Creamery Company, Klock Produce Company.
19.	Mayflower Dairy, Inc., Seattle	M. F. D.
20.	Elma Creamery Co., Elma	E. C.
21.	Cascade Creamery Co., Yakima	Cascade Creamery Co., C. C. C.
22.	Brooklyn Dairy Products Co., Seattle	Brooklyn Dairy, a brass leaf representing clover leaf, N. C. D., BR D CO.
23.	The Independent Dairy, Inc., Seattle	Independent Dairy.
24.	Pure Milk Dairy, Seattle	P. M. D.
25.	The Independent Dairy, Inc., Seattle	Redmond Creamery.
26.	S. Stray, Seattle	Seattle D. and M. B. D.; Seattle Dairy.
27.	Swift & Company, Seattle	Swift.
28.	Miller Bros. Co., Tacoma	Miller Bros. Co., Tacoma.
29.	Wingard Bros. & Co., Tacoma	W. B. Co., Tacoma, Wash.
30.	Coast Ice & Cold Storage Co., Everett	C. I. & C. S. Co.
31.	Lewis County Co-operative Creamery, Chehalis	L. C. Co-op.-Cry.
32.	Broadview Dairy Co., Spokane	B. D. Co. and Broadview.
33.	Royal Ice Cream Co., Tacoma	R. I. C. C.
34.	Pioneer-Alpine Dairy, Everett	P. A. D.
36.	Broadway Dairy Co., Seattle	Northwestern Dairy Co., N. W. D. and E. S. D.
38.	Dairy Products Co., Seattle	Dairy Products Co.
39.	H. C. Stokes, Inc., Seattle	Stokes.
40.	Bayview Dairy, Inc., Seattle	B. V. D.
41.	Ellensburg Produce Co., Seattle	E. P. Co.
42.	M. Gye (American Dairy), Tacoma	A. D. and G.
43.	Henningsen Produce Co., Tacoma	H. P. Co, Tacoma; T. C. C., Tacoma; Lake Park Cry.

	NAME AND LOCATION.	BRAND.
44.	Smith's Dairy Farms, Aberdeen	Smith's Dairy Farms; S. D. & S.
45.	F. S. Stimson Company, Seattle	Hollywood Farm.
46.	Royal Dairy Products Co., Bellingham	R. D. P. Co.
47.	Anderson Creamery Co., Seattle	A. C. C.
48.	Westlake Dairy, Seattle	W. L. D., W. D. and C. D.
49.	A. D. Vaninetti, Monroe	A. G. Vaninetti, Monroe, Wash.
50.	A. Kristoferson, Inc., Seattle	Alfred Kristoferson, Pasteurized Milk and Cream, Seattle, Wash.
51.	Spokane Dairy Products Co., Spokane	H. H. D. and S. D. P. Co.
52.	Sultan Basin Creamery, Sultan	S. B. Cry and S. B. Cry., Sultan, Wash.
53.	Carlton Dairy Co., Hoquiam	C. D. C and C. D. Co.
54.	Holcomb Dairy Co., Snohomish	H. D. Co.
55.	Consolidated Creamery Co., Ellensburg	S.
56.	Pure Milk Dairy, Seattle	P. M. D.
57.	Commercial Creamery Co., Spokane	C. C. Co., Spokane, Wn.
58.	Dungeness Cream & Milk Co., Dungeness	Dungeness Jersey Butter. Dungeness Pasteurized Cream and Milk
59.	Dungeness Cream & Milk Co., Dungeness	Dungeness Buttermilk. Dungeness Cottage Cheese.
60.	The Valley Creamery, Oakville	Valley Creamery.
61.	Curlew Creamery Co., Chewelah	C. C. Co., Chewelah, Wash. Curlew Creamery Co., Chewelah, Wash. C. C. Co., Curlew, Wash. Curlew Creamery Co., Curlew, Wash.
62.	Roy Co-op. Creamery Association, Roy	Roy Co-op. Cry.
63.	Vancouver Creamery Co., Inc., Vancouver	Vancouver Crmy. Co. (on shoulder). Van. Crmy. (on neck).
64.	W. A. Acorn, Old Dominion Cry., Colville	O. D. Creamery, Colville, Washington.
65.	Hub City Creamery, Centralia, Wash.	H U B
66.	Pacific Dairy, Inc., Seattle	Pacific Dairy, Inc. Pacific Seattle Dairy.
67.	Velvet Ice Cream Co., Seattle	V. I. C.
68.	Union Dairy Co., Aberdeen	U. D.
69.	American Creameries, Inc., Seattle	Armour; Armour Creameries; Armour & Company; Armour, Seattle; and American Creameries, Inc., Seattle.
70.	DeSota Creamery Co., Kennewick	DeSota Cry. Co., Kennewick. Mountain View Prod. Co., Sunnyside, Wash. Mountain View Produce Co., Sunnyside, Wash. M. V. P. Co. Kennewick Co-op. Cry. K. Co-op. C. Co.
71.	Seattle Milk Shipers' Ass'n., Seattle	Seattle Milk Shippers' Association.
72.	Floyd Sather, Glendale Dairy, Port Townsend	Sather.

LIVE STOCK REPORT.

The report of the Crop Reporting Board of the Bureau of Markets and Crop Estimates of the United States Department of Agriculture shows, in connection with the numbers of live stock on farms and ranges in Washington, January 1, 1922, as compared with January 1, 1921, the following: Horses, 2% decrease; mules, practically no change; milk cows, 3% increase; other cattle, 5% decrease; sheep, 10% decrease; and swine, 10% decrease. For the United States, milk cows and swine show increases while all other classes of live stock have decreased in number.

The aggregate value of all farm live stock in Washington on January 1, 1922, was estimated to be $54,221,000 against $62,791,000 one year ago and $81,505,000 on January 1, 1920.

Aggregate values for farm live stock of the United States are as follows: 1922, $4,779,957,000; 1921, $6,051,202,000; and 1920, $8,165,194,000.

NOTE: The census report for 1920 has the following explanation in regard to its figures: "The census of 1920 was taken as of January 1, and that of 1910 as of April 15. Since a great many domestic animals are born during the period between January 1, and April 15, and, on the other hand, a considerable number of older animals are slaughtered or die during the same period, the numbers of the different classes of animals for the two censuses are not fully comparable. In addition to the change in the enumeration, there have been certain changes in the age and sex qualifications."

The observation is also applicable to the estimates of the Department of Agriculture here given, and its previous estimates, inasmuch as the census is the primary basis of these estimates.

		WASHINGTON		UNITED STATES	
		Number	Value	Number	Value
Horses	Jan. 1, 1922	281,000	$19,670,000	19,099,000	$1,346,154,000
	Jan. 1, 1921	287,000	23,534,000	19,208,000	1,619,423,000
	Jan. 1, 1920	296,000	28,416,000	19,766,000	1,907,646,000
Mules	Jan. 1, 1922	22,000	1,936,000	5,436,000	479,806,000
	Jan. 1, 1921	22,000	2,134,000	5,455,000	636,568,000
	Jan. 1, 1920	23,000	2,622,000	5,427,000	805,495,000
Milk Cows	Jan. 1, 1922	286,000	20,020,000	24,028,000	1,224,767,000
	Jan. 1, 1921	278,000	20,850,000	23,594,000	1,515,249,000
	Jan. 1, 1920	290,000	25,520,000	23,722,000	2,036,750,000
Other Cattle	Jan. 1, 1922	256,000	7,244,800	41,324,000	982,666,000
	Jan. 1, 1921	269,000	8,903,900	41,993,000	1,316,727,000
	Jan. 1, 1920	283,000	11,970,900	43,398,000	1,875,043,000
Sheep	Jan. 1, 1922	500,000	2,700,000	36,048,000	173,159,000
	Jan. 1, 1921	555,000	3,829,500	37,452,000	235,855,000
	Jan. 1, 1920	624,000	6,801,600	39,025,000	408,586,000
Swine	Jan. 1, 1922	212,000	2,650,000	56,996,000	573,405,000
	Jan. 1, 1921	236,000	3,540,000	56,097,000	727,380,000
	Jan. 1, 1920	265,000	6,174,000	59,344,000	1,131,674,000

The number of live stock not on farms, i. e., in cities and villages, is not reported yearly, but their number in 1920 as reported by the census was:

	Washington	United States
Horses	6,596	1,705,611
Mules	235	378,250
Cattle	18,766	2,111,928
Sheep	223	450,742
Swine	4,367	2,638,389

VALUES OF LIVE STOCK ON WASHINGTON FARMS.

	Jan. 1		Under 1 year	1 to 2 years	2 Years and over	All ages
Horses	1922	....	$28 00	$45 00	$75 00	$70 00
	1921	....	32 00	51 00	89 00	82 00
	1920	....	37 00	64 00	103 00	96 00
Mules	1922	....	39 00	60 00	95 00	88 00
	1921	....	41 00	62 00	105 00	97 00
	1920	....	48 00	78 00	123 00	114 00
Milk Cows	1922	....	......	......	......	70 00
	1921	....	......	......	......	75 00
	1920	....	......	......	......	88 00
Other Cattle	1922	....	16 00	28 00	45 00	28 30
	1921	....	19 00	33 00	52 00	33 10
	1920	....	24 00	42 00	67 00	42 30
		Lambs	Ewes	Wethers	Rams	
Sheep	1922	$4 40	$5 50	$5 00	$13 00	5 40
	1921	5 50	7 00	7 00	20 00	6 90
	1920	8 70	11 30	11 20	23 00	10 90
Swine	1922	......	......	......	......	12 50
	1921	......	......	......	......	15 00
	1920	......	......	......	......	23 30

The disease being of a chronic nature, there is a tendency to acquire an immunity. To keep an animal until such immunity is acquired is a speculative proposition, and from an economic standpoint, is not always the wise move, moreover, a great deal depends on the commercial and breeding value of the animal.

At present there does not appear to be any method or agent that will serve as a proven cure for abortion. Several methods have been tried, with varied degree of success. The sequelae, or diseased conditions resulting from abortion, seems to be of greater significance than the mere fact that an animal aborts. Apparently, the treatment is, at this time, directed more towards the conditions following abortion. It is not the mere fact that an animal aborts, but usually the resulting sterility that causes an owner to sell the animal to a butcher or to an unsuspecting buyer, who may in time suffer a great loss from the introduction of a diseased animal to a sound herd.

At this time several of the investigators are placing much stress on sanitation as the chief factor in the control and eradication of abortion and giving secondary consideration to any biologic or medicinal treatment; however, not losing sight of surgical measures where indicated.

Restrictions as to the sale of cattle affected with or exposed to infectious abortion may in time be found advisable. This should be contingent upon the result of the research now being carried on by the many investigators.

RABIES.

Rabies is an acute, infectious disease caused by a filterable microorganism known as negri bodies. It is usually transmitted by the bite of an infected animal to other animals and to man. Practically all warm-blooded animals are susceptible to rabies.

The period of incubation, or the time elapsing between the bite and development of the first symptoms, is extremely variable. Three factors seem to influence the incubation period; usually the virulence of the organism, susceptibility of the animal and the site of infection. It is from ten days to one year. In dogs and swine the period of incubation is, as a rule, brief—ten to thirty days; in cattle and horses somewhat longer—mostly one to three months. Young animals develop the disease earlier than old ones.

Surgical and medical treatment of the site of infection, together with the Pasteur treatment, which is a series of vaccinations, is the only logical treatment and the one that should be employed at all times in man. Animals, if valuable enough to warrant it, can be successfully treated.

This disease has been quite widespread over several counties in the central part of the state. In every instance where people or livstock have been bitten it has been traced, either directly or indirectly, to rabid coyotes. In fact, ninety per cent of the trouble has been in coyotes. Several people have had to take the Pasteur treatment, and only in a few cases has the disease been fatal to man.

To establish quarantine against coyotes is out of the question, and one against dogs running at large or unmuzzled is not as effective as desired.

ACTIVE LIVESTOCK ORGANIZATIONS IN STATE OF WASHINGTON—Continued.

Name of Organization	President	Address	Secretary	Address
Snohomish County Holstein Breeders' Association	Dr. H. K. Stockwell	Monroe		
Snohomish County Jersey Cattle Club	Don McRae	Lakewood		
Spokane County Holstein Association	J. L. Smith	Spokane		
Spokane County Jersey Club	Thos. Griffiths	Spokane	Wm. Auld	
Stevens County Jersey Cattle Club	W. M. Huddleson	Colville	R. K. Skeels	Colville
Stevens County Livestock & Fair Association	T. C. Bell	Colville		
Thurston County Guernsey Association	C. C. Aspinwall	Olympia		
Thurston County Holstein Association	F. O. Baker	Olympia		
Wahkiakum County Jersey Cattle Club	H. L. Weister	Skamokawa		
Walla Walla County Holstein Association	Ralph Tuttle	Walla Walla		
Walla Walla County Poultry Association	O. M. Beatty	Walla Walla		
Walla Walla Valley P. B. Breeders' Association	W. G. Gardiner	Walla Walla		
Walla Walla Valley P. B. Jersey Bull Association	C. M. Christiansen	College Place		
Whatcom County Dairymen's Association	C. C. Davis, Mgr.	Bellingham		
Whatcom County Guernsey Cattle Club	B. C. VanderGriend	Lynden		
Whatcom County Holstein Cattle Club	A. W. Dahlquist	Sumas		
Whatcom County Jersey Cattle Club	R. I. Tanner	Sumas		
Yakima Valley Dairymen's Association	G. V. Harris	Yakima		

FOLLOWING IS A LIST OF COUNTIES SHOWING THE NUMBER AND BREED OF STALLIONS AND JACKS THAT ARE DULY LICENSED TO BE USED IN PUBLIC SERVICE.

COUNTY	STALLIONS										JACKS		TOTALS		
	Percheron	Belgian	Shire	Clydesdale	French Draft	Thoroughbred	Standard	Kentucky Saddle	Morgan	Grade Stallions	Pure Bred Jacks	Grade Jacks	Total Pure Breds	Total Grades	Grand Total
Adams	4	3	1							1	2	3	10	4	14
Asotin	2	1	2	1						2			6	2	8
Benton	5		1							2			6	2	8
Chelan	1									3	1	1	2	4	6
Clarke	2									2			2	2	4
Columbia	1	2	1					1		2	6	3	11	5	16
Cowlitz		2					1						3		3
Douglas	7	2	2	2	3					3	2	3	18	6	24
Ferry	2		1										3		3
Franklin	2										1	2	3	2	5
Garfield	2		2	3						2	4	4	11	6	17
Grant	11	1	5		1	1				4	3	2	22	6	28
Grays Harbor	2	1											3		3
Island	1												1		1
King	1			1						1			2	1	3
Kittitas	4	1	1							2	2		8	2	10
Klickitat	4	2		1			1						8		8
Lewis	3												3		3
Lincoln	8	8	5	1						1	7	7	29	8	37
Mason		1	1	1									3		3
Okanogan	3	1	2	1		1				10		4	8	14	22
Pierce						1				3			1	3	4
San Juan					1								1		1
Skagit	4	1								2			5	2	7
Skamania										1				1	1
Snohomish	2									2			2	2	4
Spokane	6	6	10	1						1			23	1	24
Stevens	2	1											3		3
Thurston	3									1			3	1	4
Walla Walla	8						1			1	5	4	14	5	19
Whatcom	2									3	1		3	3	6
Whitman	25	7	21	4			1			7	16	12	74	19	93
Yakima	10	3	7	3					1	3	1	1	25	4	29
Out of State	2		1							1			3	1	4
Totals	129	43	63	19	5	3	4	1	1	60	51	46	319	106	425

NUMBER OF STALLIONS AND JACKS LICENSED IN STATE SINCE ENACTMENT OF STALLION REGISTRATION LAW.

YEAR REPORT PUBLISHED	STALLIONS		JACKS	
	Pure Bred	Not Pure Bred	Pure Bred	Not Pure Bred
1913	430	307	7	67
1914	584	534	18	83
1916	506	423	20	71
1918	478	276	56	47
1920	332	139	112	65
1922	268	60	51	46

BOVINE TUBERCULOSIS.

The eradication of bovine tuberculosis from the herds of this state and the United States is at this time foremost in animal disease control. The work as carried on in this state for the past two years has shown tremendous advancement and a comparison of the accompanying tables with those of the preceding biennium will show that there were 51,770 more cattle tested this biennium and the percentage of reactors dropped from 3.46% to 2.42%. Taking into consideration that there were nearly twice as many cattle tested and the percentage of reactors greatly reduced it is not unreasonable to conclude that tuberculosis in cattle is on the decrease and, further, that it is only a matter of a very few years of intensive work before it will be practically eradicated from the herds of this state.

Already the counties of Chelan, Island, Pacific, San Juan, Spokane, Walla Walla, Wahkiakum and Whatcom have had from 95 to 99 per cent of the cattle tested and in all other counties from 50 to 85 per cent of the cattle have been examined. Some dairy districts have had 98 per cent of the herds tested and in a few cases the creameries and other factories are paying a premium for milk and cream from tested cattle.

As the situation now stands it is only a matter of obtaining sufficient appropriation with which to carry on the work. The indemnity appropriation has never been sufficient to carry through the biennium and as soon as it becomes exhausted the work has been at a great disadvantage. It would seem that the logical way would be to make an appropriation large enough to conduct an extensive campaign for two or three bienniums and thereafter discontinue the indemnity fund. Our present force of inspectors is not large enough to take care of the work there is to be done, consequently the testing is unavoidably delayed in a great many cases. To relieve this condition an inspector should be placed in every densely populated cow county and enough indemnity funds made available for the succeeding biennial periods so that there would be no lapse in the testing. By so doing the herds of this state would have an unlimited market and the dairy products would enjoy an enviable reputation the world over.

TUBERCULIN TESTS CONDUCTED BY THE WASHINGTON STATE DEPARTMENT OF AGRICULTURE AND THE UNITED STATES BUREAU OF ANIMAL INDUSTRY.

July 1, 1920, to June 30, 1922.

COUNTY	Number Herds Tested	Number Cattle Tested	Number Healthy	Number Diseased	Number Suspects	Number in Quarantine	Percentage of Diseased Cattle
Adams	14	156	151	5	......	......	3.2
Asotin	3	9	9	......	......	......	......
Benton	175	1,169	1,148	20	1	1	1.71
Chelan	906	2,379	2,323	56	......	5	2.35
Clallam	66	1,159	1,141	18	......	......	1.55
Clarke	226	3,852	3,721	131	......	7	3.4
Columbia	15	554	542	12	......	......	2.16
Cowlitz	90	1,486	1,468	18	......	......	1.21
Douglas	38	80	79	1	......	1	1.25
Ferry	1	4	3	1	......	......	25%
Franklin	220	771	748	22	1	1	2.85
Garfield	......	......	......	......	......	......	......
Grant	42	365	353	12	......	......	3.28
Grays Harbor	128	1,982	1,950	32	......	......	1.61
Island	456	2,681	2,672	9	......	......	.33
Jefferson	97	2,192	2,181	11	......	......	.5
King	1,307	15,366	14,872	491	3	17	3.19
Kitsap	55	440	433	7	......	......	1.58
Kittitas	412	2,710	2,598	112	......	2	4.13
Klickitat	9	12	12	......	......	......	......
Lewis	462	5,827	5,708	114	5	6	1.95
Lincoln	84	1,934	1,911	23	......	2	1.18
Mason	55	567	565	2	......	......	.35
Okanogan	339	2,775	2,729	46	......	......	1.65
Pacific	455	3,477	3,468	9	......	......	.25
Pend Oreille	14	212	211	1	......	......	.47
Pierce	336	6,038	5,832	206	......	6	3.41
San Juan	585	3,572	3,553	19	......	......	.53
Skagit	369	5,148	4,867	278	3	21	5.4
Skamania	......	......	......	......	......	......	......
Snohomish	1,157	14,999	14,621	376	2	4	2.5
Spokane	688	8,199	7,913	286	......	3	3.5
Stevens	297	2,377	2,338	39	......	1	1.64
Thurston	450	5,605	5,540	64	1	1	1.14
Wahkiakum	475	5,574	5,402	82	......	......	1.47
Walla Walla	765	4,069	3,985	80	4	7	1.96
Whatcom	1,144	13,738	13,462	272	4	9	1.97
Whitman	278	1,581	1,487	42	2	4	2.74
Yakima	575	4,917	4,710	199	8	24	4.04
Totals	12,806	127,926	124,796	3,096	34	122	2.42

TUBERCULIN TESTS UNDER STATE DEPARTMENT OF AGRICULTURE.

	Number Herds Tested	Number Animals Tested	Number Reactors
June 10, 1913, to June 30, 1914	......	6,562	349
July 1, 1914, to June 10, 1915	513	11,280	1,106
June 10, 1915, to June 30, 1916	2,292	28,930	1,954
July 1, 1916, to June 30, 1918	3,866	48,852	1,806
July 1, 1918, to June 30, 1920	7,092	76,156	2,646
July 1, 1920, to June 20, 1922	12,806	127,926	3,096
Totals	27,082	299,706	11,047

TAKEN FROM REPORT OF UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY, WASHINGTON, D. C.

Summary of Tuberculosis Eradication Work in Co-operation With the Various States, From July 1, 1920, to June 30, 1922.

Number of Herds Tested	Number of Animals Tested	Number of Reactors	Percentage of Reactors
282,318	3,759,715	134,696	3.58

FOLLOWING IS A LIST OF THE ACCREDITED HERDS IN THIS STATE.

COUNTY	OWNER	ADDRESS	BREED
Benton	Anderson, F. C.	Richland	Jersey
	Benson, E. F.	Prosser	Holstein
	Mitchell, Ralph A.	Finley	Holstein
Chelan	Corle, H. L.	Wenatchee	Jersey
	Johnson, J. N.	Malaga	Jersey
	Marr, Marvin	Malaga	Jersey
Clarke	Case, B. O. & Sons	Vancouver	Holstein
Cowlitz	Kingsbury & Cotter	Carrolls	Holstein
Grant	Kriete, Emma V.	Ephrata	Jersey
Jefferson	Ammeter, Albert	Chimacum	Holstein
	Anderson, R. A.	Chimacum	Holstein
	Cook, W. H.	Port Ludlow	Holstein
	Griffith Brothers	Dabob	Holstein
	Jones, David	Dabob	Jersey
	Jones, Hugh	Dabob	Jersey
	Kampendonk, O. H.	Chimacum	Holstein
	Twiggs, C. P.	Port Ludlow	Holstein
	Worthington, J. W.	Hadlock	Holstein
	Yarr Brothers	Chimacum	Holstein
	Yarr, Thomas	Chimacum	Holstein
	Yarr, Thomas R.	Dabob	Holstein
King	Dunlap, J. W. P.	Portage	Holstein
	Methow Valley Livestock Co.	Tolt	Holstein
	Willis, Dr. Park Weed	Redmond	Guernsey
	Horrocks, J. I.	Tolt	Holstein
Kitsap	Carlson, John	Manette	Holstein
	Pratt, C. E., Jr.	Port Orchard	Holstein
	Schold, A. J.	Silverdale	Holstein
Kittitas	Dunford, P. A.	Cle Elum	Jersey
	Bull, J. A.	Ellensburg	Shorthorn
Lewis	Adolphson, A.	Chehalis	Jersey
	Belcher, J. B.	Forest	Jersey
	Chamberlain, J. C.	Ceres	Holstein
	Dempsey, W. J.	Chehalis	Holstein
	Donaldson, E. A.	Chehalis	Holstein
	Flagg, A. T.	Chehalis	Jersey
	Galvin, Geo. J.	Centralia	Holstein
	Gilliam, M. L.	Chehalis	Holstein
	Gleason, Grant	Chehalis	Jersey
	Hall, James	Chehalis	Holstein
	Hamilton, Frank	Chehalis	Holstein
	Hamilton, Harry P.	Forest	Holstein
	Hansen, W. T.	Chehalis	Holstein
	Hope, L. B.	Chehalis	Holstein
	Laakso, Carl	Winlock	Jersey
	Lee, C. J.	Onalaska	Jersey
	Limmer, Joseph	Winlock	Holstein
	Moses, E. M. & Son	Chehalis	Holstein
	Rinta, John E.	Winlock	Jersey
	Root, W. A.	Chehalis	Holstein
	Roundtree, G. O.	Klaber	Holstein
	Sherer, L. D.	Chehalis	Holstein
	Sorenson, N. C.	Chehalis	Jersey
	Young, F. L.	Chehalis	Holstein
	Nisbet, Thomas	Chehalis	Holstein
Lincoln	McKay, Peter	Almira	Shorthorn
	Pooler, A. L.	Almira	Holstein
	Reilly, A. H.	Waukon	Holstein
Pacific	Gile, A. L.	Chinook	Guernsey
	Parpala, John & Sons	Nahcotta	Holstein
Pierce	Western Wash. Experiment Stat.	Puyallup	Holstein

FOLLOWING IS A LIST OF THE ACCREDITED HERDS IN THIS STATE—Continued.

COUNTY	OWNER	ADDRESS	BREED
San Juan	Davis, S. P.	Olga	Guernsey
	Shortley Brothers	Orcas	Jersey
Skagit	Cleveland, Dr. H. E.	Burlington	Guernsey
	Hulbert, J. H.	Mount Vernon	Shorthorn
	Lawson, A. J. & Son	Blanchard	Holstein
	Lohse, Herman	Sedro-Woolley	Holstein
	Nobles Bros.' Dairy Farm	Bow	Guernsey
	Ruley, H. S.	Mount Vernon	Jersey
	Miller, J. M.	Burlington	Guernsey
	Lee Brothers	Mount Vernon	Holstein
Snohomish	Eitzenberger, Max	Arlington	Jersey
	Grimm, W. G.	Arlington	Jersey
	Hoem & Buck	Snohomish	Holstein
	Holdal, Hans	Arlington	Guernsey
	Jenner, Fred J.	Oso	Guernsey
	Johnson, H.	Oso	Guernsey
	MacRae, Donald	Lakewood	Jersey
	Orr, Luther	Arlington	Guernsey
	Steffen, Herman	Monroe	Holstein
	Tualco Valley Farm	Monroe	Holstein
Spokane	Hutchinson, F. W.	Mead	Jersey
	Oldham, C. J.	East Farms	Shorthorn
	Rogers, Dewey	Spokane	Jersey
	Waikiki Farm	Spokane	Jersey
Stevens	Bell, T. C.	Colville	Holstein
	Cosner, H. E.	Addy	Jersey
	Crawford, James	Colville	Holstein
	Gardner & Burscham	Meyers Falls	Jersey
	Huddleson, W. M.	Colville	Jersey
	Leiser, Oliver E.	Kettle Falls	Holstein
	Selle, Gust	Colville	Holstein
	Skeels, H. L.	Addy	Jersey
	Skeels, H. T. & Sons	Addy	Jersey
	Skidmore, A. E. & Sons	Colville	Red Poll'd
Thurston	Bouchard, M.	Bucoda, R. 1	Holstein
	Ferguson, O. E.	Olympia	Jersey
	Rector, Jess	Bucoda, R. 1	Holstein
	Rector, W. L.	Bucoda, R. 1	Holstein
	Sommers Brothers	Little Rock	Holstein
	Starr, Charles	Olympia	Jersey
	Wigley, Robert J.	Bucoda, R. 1	Holstein
Wahkiakum	Wiester, H. L.	Skamokawa	Jersey
Walla Walla	Baker, Chas.	Walla Walla	Holstein
	Baker, D. F.	Walla Walla	Holstein
	Cochrane, Geo. C.	Dixie	Jersey
	Compaue, J. H.	Walla Walla	Guernsey
	Fields, F. R.	Walla Walla	Shorthorn
	Gordon, H. G.	Walla Walla	Guernsey
	Plaquet, O. C.	Walla Walla	Jersey
Whatcom	Bateman, H. W.	Bellingham	Guernsey
	Benson, A.	Lynden	Holstein
	Carlyon & Hogg	Bellingham	Jersey
	Crabtree, B. C.	Lynden	Jersey
	Crabtree, Edgar	Everson	Jersey
	Curry, J. C.	Ferndale	Guernsey
	Evans, H. J.	Ferndale	Holstein
	Fulford, S. H.	Ferndale	Guernsey
	Gates, Cyrus	Bellingham	Jersey
	Kohler, C. A.	Ferndale	Holstein
	Lauckhart, William	Lynden	Ayrshire
	McLeod, David	Bellingham	Jersey
	Swenson, Arthur N.	Lynden	Jersey
	Swenson, C.	Lynden	Jersey
	Tanner, R. I.	Sumas	Jersey
	Vander Griend Brothers	Lynden	Guernsey
	Douglas, H. B.	Ferndale	Guernsey

FOLLOWING IS A LIST OF THE ACCREDITED HERDS IN THIS STATE—Continued.

COUNTY	OWNER	ADDRESS	BREED
Whitman	Grief, Carl A.	Uniontown	Shorthorn
	Thayer, L. G.	Pullman	Guernsey
	Barclay, C. H.	Pullman	Holstein
	Turnbow, J. E. & Son	Palouse	Holstein
	State College of Washington	Pullman	Holstein
	Carson, J. D.	Pullman	Jersey
Yakima	Gano, F. D.	Grandview	Holstein
	Todd, Wm. & Sons	Yakima	Holstein
	Van Belle, C. G.	Sunnyside	Holstein

JOHNE'S DISEASE (Paratuberculosis of Cattle).

Johne's disease is a chronic infectious and contagious disease, caused by a bacilli affecting the intestinal mucous membrane. The symptoms of the disease consist in gradual emaciation or loss of flesh, unattended by fever or pain; however, when diarrhea develops, it may occasion irritation, causing some pain. The appetite is quite variable and milk supply decreased. On post-mortem, the walls of the small intestines are found to be considerably thickened.

This disease has been quite satisfactorily diagnosed and reported from several districts on the west side. Inasmuch as all attempts to treat the disease have led to unsatisfactory results, it is the best policy to isolate or destroy affected animals as soon as possible after a satisfactory diagnosis of the disease. It is usually found in low, wet pastures or those that frequently become flooded.

ACTINOMYCOSIS (Lumpy Jaw).

Actinomycosis is a non-contagious infectious disease of cattle, occasionally affecting other animals and man, caused by the ray fungus. It is a chronic disease and may extend over months and even years, especially so when it develops in the bone structure. Superficial cases, accessible to surgical treatment, respond quite favorably.

These cases are frequently reported from widely scattered sections of the state, and, if upon investigation are found to be in advanced stages, the animals are killed. Those of supposedly recent origin, which offer a favorable prognosis, are quarantined and treatment suggested.

SHEEP SCAB.

For the past two years, this disease has not manifested itself to any great extent. This department, with the co-operation of the United States Bureau of Animal Industry, has taken every precaution to keep the infection from getting a start. Strict surveillance is kept on sheep from without the state.

Scabies is caused by a very minute parasite, the psorptes ovis; these mites burrow into the skin, producing an irritation which causes the sheep to rub, scratch and bite themselves. The fleece becomes taggy from the biting and pulling of wool, and as the condition progresses, the affected areas become denuded of wool and a hard crusty scab forms. Later on, the general condition of the sheep may be affected, and if the disease is allowed to progress, death follows in a great many cases.

The scab mite works so insidiously that an entire band may be affected before the condition is detected. The mite is more easily found in areas of recent infection than in the old encrusted areas.

Destruction of the scab mite is the only cure for the condition; the affected sheep will clean up and grow a new fleece as soon as this is accomplished. To this end dipping in a recognized dip approved by the United States Bureau of Animal Industry, is the only safe way. Affected sheep are dipped twice, at intervals of ten to fourteen days, and all exposed sheep are dipped once.

Scabies is a menace to the sheep industry in that the wool crop is, in part, lost and the unthrifty condition of the lambs makes them unfit for the market. The expense connected with the dipping is by no means a small item, and it is for these reasons that the department is observing every precaution to keep the sheep of this state from becoming infected.

REPORT OF SHEEP INSPECTED AND DIPPED FOR SCABIES.

COUNTIES	Number Diseased and Exposed	Number Dipped
Benton	2,192	2,192
Pierce	1,061	1,061
Wahkiakum	237	237
Total	3,490	3,490

GLANDERS.

Glanders is not only becoming less prevalent in this state, but indications are quite favorable for its complete eradication.

During this biennium the number of cases found is much less than that of the preceding two years, as shown by the table of statistics given below.

The control of glanders involves careful supervision over horses in crowded areas, and the prevention of new infection from outside sources. This state requires a mallein test of all the equine species coming into the state.

Any animal reacting to the mallein test is quarantined, killed and disposed of, either by burning or burying in quicklime. Cleaning and disinfecting of the premises is thereafter done under the supervision of this department.

The loss of animals killed on account of glanders is borne by the owner as the state does not pay indemnity for them. It would appear that an appropriation for indemnity for glandered horses should be made and thereby assist in eradicating the disease, as the owners would give better co-operation were they to receive compensation for destroyed animals.

HORSES TESTED FOR GLANDERS July 1, 1920, TO JUNE 30, 1922.

COUNTIES	Number Horses Tested	Number Healthy	Number Diseased	Number Slaughtered	Number of Reactors
Chelan	14	13	1	1	7.14%
Douglas	5	5	......	......	......
Ferry	10	5	5	5	50.00%
Franklin	13	13	......	......	......
Grays Harbor	1	1	......	......	......
Klickitat	41	41	......	......	......
Okanogan	35	34	1	1	2.85%
Spokane	35	33	2	2	5.71%
Stevens	28	27	1	1	3.57%
Thurston	3	3	......	......	......
Walla Walla	5	5	......	......	......
Whatcom	15	13	2	2	13.33%
Whitman	1	1	......	......	......
Yakima	37	35	2	2	5.4%
Totals	243	229	14	14	5.76%

HEMORRHAGIC SEPTICEMIA.

The prevalence of this disease throughout the state seems to be of much importance as it quite similarly affects cattle, sheep and swine.

In swine it is often mistaken for Hog Cholera; in fact, the two diseases have several symptoms in common and in many outbreaks they exist simultaneously, thereby making a diagnosis much more difficult.

The disease has not manifested itself to any great extent in sheep, but it has been a source of considerable loss in cattle. The disease is usually characterized by rather sudden death and may affect one or more animals in a herd. It is always advisable to vaccinate, as a preventive, all remaining animals of a herd not showing symptoms, and in many instances a curative treatment is given with good results. Isolation of sick from well animals and the proper sanitary measures are very effective means of controlling the disease. All animals that die from this disease should be either burned or buried in quicklime. The department does not furnish biologics for the treatment of Hemorrhagic Septicemia, but they can be purchased through the veterinarians throughout the state.

CONTAGIOUS ABORTION.

The prevalence of infectious abortion in the herds throughout this state, has, during the past few years, been of great significance. Its ravages are well known to every one engaged in the dairy and breeding industry, and the losses resulting from it and its sequel are estimated to be second only to tuberculosis.

It has been erroneously held that it cannot be hoped to eradicate or control abortion until its biology is known; knowledge of the biology of a disease does not necessarily control the disease, nor does ignorance thereof prevent its control.

The eradication of abortion in cattle is not to be brought about by the mere knowledge of its biology, but rather by learning how the causative infection invades the organs of the animal, how to prevent such invasion, and, if possible, how to destroy or render inert the infection already present.

The disease being of a chronic nature, there is a tendency to acquire an immunity. To keep an animal until such immunity is acquired is a speculative proposition, and from an economic standpoint, is not always the wise move, moreover, a great deal depends on the commercial and breeding value of the animal.

At present there does not appear to be any method or agent that will serve as a proven cure for abortion. Several methods have been tried, with varied degree of success. The sequelae, or diseased conditions resulting from abortion, seems to be of greater significance than the mere fact that an animal aborts. Apparently, the treatment is, at this time, directed more towards the conditions following abortion. It is not the mere fact that an animal aborts, but usually the resulting sterility that causes an owner to sell the animal to a butcher or to an unsuspecting buyer, who may in time suffer a great loss from the introduction of a diseased animal to a sound herd.

At this time several of the investigators are placing much stress on sanitation as the chief factor in the control and eradication of abortion and giving secondary consideration to any biologic or medicinal treatment; however, not losing sight of surgical measures where indicated.

Restrictions as to the sale of cattle affected with or exposed to infectious abortion may in time be found advisable. This should be contingent upon the result of the research now being carried on by the many investigators.

RABIES.

Rabies is an acute, infectious disease caused by a filterable micro-organism known as negri bodies. It is usually transmitted by the bite of an infected animal to other animals and to man. Practically all warm-blooded animals are susceptible to rabies.

The period of incubation, or the time elapsing between the bite and development of the first symptoms, is extremely variable. Three factors seem to influence the incubation period; usually the virulence of the organism, susceptibility of the animal and the site of infection. It is from ten days to one year. In dogs and swine the period of incubation is, as a rule, brief—ten to thirty days; in cattle and horses somewhat longer—mostly one to three months. Young animals develop the disease earlier than old ones.

Surgical and medical treatment of the site of infection, together with the Pasteur treatment, which is a series of vaccinations, is the only logical treatment and the one that should be employed at all times in man. Animals, if valuable enough to warrant it, can be successfully treated.

This disease has been quite widespread over several counties in the central part of the state. In every instance where people or livstock have been bitten it has been traced, either directly or indirectly, to rabid coyotes. In fact, ninety per cent of the trouble has been in coyotes. Several people have had to take the Pasteur treatment, and only in a few cases has the disease been fatal to man.

To establish quarantine against coyotes is out of the question, and one against dogs running at large or unmuzzled is not as effective as desired.

The only safe way is to vaccinate all dogs with the preventive vaccine, and this can be done at very little expense.

The United States Bureau of Biological Survey and State co-operating have a force of hunters and trappers working in the infected districts, but here again lack of funds has been a handicap. It is possible to kill off the coyotes, but in addition to this all dogs should be vaccinated and a law to that effect should be enacted.

ANTHRAX.

During this biennium no authenticated cases of Anthrax have been recorded. Reports of the disease from various parts of the state have been investigated, but the bacteriological or laboratory examination has been negative in each case. Basing our deductions on the laboratory examination, which is the best and surest means of diagnosis, it is safe to say that Anthrax is not present or has not been diagnosed as such in this state.

Nearly all species of animals are susceptible to this disease, and while it may be cured in man, if taken in time, it is a highly fatal disease.

Several biological houses now manufacture a serum and a vaccine used in the control and treatment of Anthrax.

BLACKLEG (Milzbrand).

Blackleg is an acute infectious, but not contagious, disease of cattle, and may affect other ruminants and swine. It manifests itself in young cattle, rarely in older cattle.

This disease has become so well known to cattlemen that it is little feared by them, due to the fact that vaccinating as a preventive is regarded as an essential part of the spring and fall round-up. This prophylactic treatment is very effective and the control measures very efficient. Only a few cases have occurred on the west slope of the Cascades, while it would be quite general in the eastern part of the state were it not for the treatment given.

The United States Bureau of Animal Industry has discontinued supplying this department with this vaccine, making it necessary for the stockmen to purchase this biologic themselves as the state does not have an appropriation for that purpose.

HOG CHOLERA.

While this disease has not shown any increase during the biennium, its complete eradication has not been effected.

The swine industry in this state is not of much volume in comparison with the Central States, and the farmers and breeders have not become accustomed to the necessity of vaccinating as a preventive against Cholera. but rather they have been content to wait until the disease manifested itself and then vaccinate their hogs or quit the business, which was usually of secondary importance.

This disease has not been general in any part of the state, rather occurring sporadically over the entire state. This department, aware of the future prospects of the live stock, and particularly the swine industry, has

recently made arrangements whereby, in cooperation with the United States Bureau of Animal Industry, a Veterinary Inspector has been placed in this state to teach preventive disease measures to the swine breeders and assist them in this industry. With the service that the two departments are now able to give, it is expected and hoped that the raising and feeding of hogs will become a far more profitable business than in the past.

The sale, use and distribution of hog cholera virus in this state is under the supervision of this department and only licensed graduate veterinarians are allowed to use it and then only upon permission from the Director of Agriculture. The unrestricted use of virus has in the past been a source of many new centers of infection from which the disease has spread.

CONCLUSION.

In concluding this report I wish to give all due consideration and credit to the practicing veterinarians and stockmen who have so ably assisted the department in the control and eradication of livestock diseases.

Respectfully submitted,
L. C. PELTON,
Supervisor Dairy and Livestock Division.

DIVISION OF HORTICULTURE.

Hon. E. L. French,
Director of Agriculture,
Olympia, Washington.

Dear Sir: I have the honor to submit herewith the Biennial Report of the Division of Horticulture covering parts of the years of 1920, 1921 and 1922.

During this period the horticultural industry of the state has continued to increase rapidly in importance, and the state is again the leading apple state of the Nation, having produced in 1921 about one-third of all the commercial apple crop of the United States. Other phases of fruit growing have also increased in relative importance until the value of fruit crop of the state is distinctly greater than it ever has been in comparison with that of other farm crops.

With the increase in acreage of fruits has come a greater problem in the control of certain fruit pests and diseases. This situation, combined with the quarantine law passed by the last session of the Legislature and the commercial certificate inspection service, is creating an ever increasing demand for the services of the horticultural division.

PLAN OF WORK.

During the past biennium we have used practically the same distribution of Inspectors-at-Large as during the preceding four years. This arrangement has not been entirely satisfactory as it has been impossible to give the service that has been demanded with the limited number of men at our disposal, and it has also been impossible to pay salaries commensurate with the training and responsibility required of our men. The state has indeed been fortunate in the type of men who have carried on the inspection work and a report would not be complete without mentioning the fine spirit of co-operation among them and the faithful and untiring service they have given. Under the present arrangement the state is divided into ten horticultural districts with an Inspector-at-Large in charge of each district. These districts range in size from one to five counties—in most cases four to five.

Under the horticultural law each county is expected to make a sufficient appropriation to care for the horticultural inspection work in that county, and most of the counties in which fruit growing is an important industry have made some provision for carrying on this work. The size of the appropriation depends in most cases upon the importance of the fruit crop and the number of deputies ranges from one part or full time man in some counties to seven or eight full time men in the larger fruit growing counties. Several of the west side counties, however, in which fruit growing is becoming more and more important as the logged-off land increases, have not made any provision for inspection in the years past.

It is very important that each of the fruit growing counties make provision for horticultural inspection, not only to help control the pests that already exist in that county, but also to prevent the importation of new pests or diseases into that part of the state. Most of our present serious fruit pests and diseases were imported into the state, and there are many more which are doing millions of dollars damage annually in nearby states which have not yet become established here. The relatively small sum needed for plant inspection work, is therefore an excellent investment. There are 28 counties in the state which made some provision for local inspection work in 1922, so that the total number of year round inspectors for the state was about 40. This number was increased to about 100 during the harvest and shipping season, but the additional expense was born by the certificate fees. Of course, the work in the different districts has varied according to the season of the year, and the particular problems of that locality, but all have followed the same general plan.

Generally speaking, growing conditions for the horticultural products have been good in 1920, 1921 and 1922, though the 1922 drought cut the berry and prune yields to some extent. In most districts the work starts in the late winter and spring with a general clean-up campaign encouraging people to spray their orchards for the control of the various pests and diseases. In a few cases it has been necessary to enforce the law in regard to the clean-up of neglected orchards as a protection to other nearby orchards, and the general improvement of tree fruits is especially evident on the west side where this has been done.

There has been an unusually large planting of nursery stock in the spring during the past two years, as is indicated by the statistics on shipments given later. This, of course, has necessitated a great deal of time being spent on the inspection of nursery shipments to see that pests and diseases were not introduced and disseminated. A few of the larger nurseries pay the expense of having a man to inspect all their shipments, but most of the nursery stock inspection must of necessity be a police measure. Many pests have been intercepted in this way, and the infected stock has either been disinfected or destroyed. As usual the greatest number of trees have been condemned for Crown Gall, though in many instances the Eastern Peach Borer has been found as well as the Flat-headed Apple Borer, several kinds of Scale, Pear Thrips, Strawberry Weevils, Crown Borers, Cane Borers and many other insect pests as well as diseases such as Anthracnose, Fire Blight, Apple Powdery Mildew, California Peach Blight, Peach Yellows and many others.

QUARANTINE WORK.

During the summer months the campaign is continued against various pests and diseases as they have appeared from time to time, and the men have spent considerable time in enforcing quarantine orders issued under authority of the new 1921 quarantine law. The quarantines so far in effect are against the following pests and diseases: No. 1—Revoking all Previous Quarantine Orders. No. 2—Pertaining to White Pine Blister Rust. No. 3—Pertaining to Corn Products and the European Corn Borer. No. 4—Pertaining to the Alfalfa Weevil. No. 5—Pertaining to Pear Thrips. No. 6—Pertaining to Strawberry Root Weevils and Crown and Cane Gall of Berry Plants. No. 7—Pertaining to White Pine Blister Rust in Washington. No. 8—Amendment to Quarantine Order No. 4. No. 9—Pertaining to Peach Yellows and Peach Rosette. No. 10—Pertaining to the Potato Eelworm and Potato Tuber Moth. No. 11—Pertaining to Eastern Filbert Blight. No. 12—Amendment to White Pine Blister Rust in Washington (No. 7). No. 13—Second Amendment to White Pine Blister Rust Quarantine in Washington (No. 7).

Probably the most inspections have been made under the Alfalfa Weevil Quarantine, the Potato Tuber Moth Quarantine, the Strawberry Weevil and Cane Gall Quarantine and the White Pine Blister Rust Quarantine. Under each of these orders, it has been found necessary to intercept shipments in violation of them, and in several cases it has been especially fortunate that the shipments were caught. This applies in particular to two car lots of California potatoes infected with the Potato Tuber Moth, which the importers made several attempts to have unloaded in different parts of the state. These were finally returned to San Francisco.

CONDITIONS BY DISTRICTS.

In checking up the work in the various districts there are a number of features that are of special interest.

In District Number 1 we have had the Pear Thrips to contend with. These have appeared in orchards close to the Oregon line, and it has been quite definitely established that they have been imported from that state. This is proving to be a very difficult situation to handle as the men on the Oregon side are making no attempt to control this pest. In the Clarkston District the formerly serious infections of San Jose Scale and California Peach Blight have both been brought under control by systematic spraying.

In District Number 2, or the Spokane Section, the big pest control problem has been the Colorado Leaf Roller. Through a special appropriation of Spokane County a man was put in charge of this work, and he has succeeded in demonstrating that where the right oil sprays are properly applied and then followed up by heavy arsenical sprays even the worst cases of Leaf Roller infestations can be controlled.

In District Number 3, the Kennewick-Prosser Section, the outstanding feature of the horticultural situation is the heavy planting of grapes. This district has its troubles with pests and diseases, but they are not essentially different from those of other districts except, perhaps, in the Climbing Cut Worm, which has required special attention.

In the Wenatchee Section, or District No. 4, the Pear Leaf Blister Mite has appeared on the apple, and in 1921 did considerable damage. Early in the spring of 1922, however, a campaign was carried on to get the growers to spray thoroughly for this pest. The result is that there is very little of its work to be found except in a very few orchards where the proper spray was not applied. In this district, as well as in other districts in 1922, there has been a great increase in the percentage of wormy apples. This is probably due to a number of causes, but the main reason in all probability is the unusually favorable season for the developments of the worms. The weather has been so warm that both the fruit and worms have developed very rapidly, thus leaving more space between spray drops for the extraordinarily large number of worms to find. This is particularly true in the older hotter parts of the fruit districts, and thus the tonnage of the good fruit has been cut somewhat around the city of Wenatchee.

The Yakima Valley, or District No. 5, has developed its own special problems. We have had several outbreaks of the Colorado Potato Beetle, and to date these have been promptly and effectively stamped out. Of course, the Codling Moth was unusually bad in the district also, but we have had some excellent proof that even against these odds the worms can be controlled. One orchardist in 1921 had so many worms on his 25-acre tract that he was completely discouraged with his control measures, and he, therefore, asked the Local Inspector to take charge of the spray program. This was done with the result that there were few worms and stings in 1922 in the whole orchard except in a few Rome Beauty trees near the chicken house. The Red Spider was also particularly troublesome in 1922, as was the Wire Worm in the potato fields. The growers of the state need considerable help in working out control measures for the Red Spider, the Wire Worm and the Potato Eelworm.

In District Number 6, which includes the apple section of the White Salmon District and the prunes of Clarke County, the department put on as an intensive clean-up campaign as funds permitted, and succeeded in getting many of the old orchards cleaned up as well as a more complete spray program followed in the commercial orchards. One of the biggest problems, however, in the White Salmon District is that of orchard soil fertility and its relation to water supply. The local inspector was able to put on a very good packing school which, in addition to general advice on pest control and orchard management, has helped materially in improving the quality and appearance of the pack. It should also be born in mind, that Vancouver is very important as an entry point for nursery stock, fruits and vegetables, both from the east and Oregon and California on the south. Better provision should be made for the inspection of incoming shipments at this point.

In District Number 7, or that extending from Chehalis to Willapa Harbor, Grays Harbor and Olympia, inspection of berry fields under the berry quarantines has taken up much time. In addition to this an intensive clean-up campaign was put on, particularly in Olympia, during the winter and spring of 1922. This, combined with the favorable season's growth, has produced the best and cleanest tree fruits found in this district for many years. The cranberry work will be mentioned separately.

In District No. 8, which includes the Puyallup Valley and the Olympic Peninsula, the Tent Caterpillars, Strawberry Weevils, Cane Gall and Cherry Fruit Maggot did serious damage, and have proved the necessity of having more money for the fight against them. The Cherry Fruit Maggot is particularly insidious because it is difficult to tell which fruit contains the maggot. There is no place in the world where the sweet cherry can be grown to greater perfection than in the State of Washington, and it will be an enormous loss to let this pest get well started.

In District Number 9, or King County, in addition to the regular inspection work, considerable time and effort was spent on the fight against the European Earwig. This was financed for most part by the City of Seattle and in those districts where it was possible to see that all property was properly baited, the clean-up was very effective.

In District Number 10, which includes the territory from Everett to Bellingham and the island counties, a great deal of time was spent on the clean-up of old orchards, as well as general pest control work. In Snohomish County the First National Bank of Everett made it possible to keep a man at work particularly on problems of the berry growers. In all of the Puget Sound territory there has been a large increase in the acreage of small fruits and berries, as will be shown by the orchard census tables later on.

WHITE PINE BLISTER RUST.

In addition to the regular work of the various districts the department carried on several special campaigns. Some of the quarantine work has already been mentioned, but the quarantine against the White Pine Blister Rust has probably required more attention than any other one. The White Pine Blister Rust was reported by federal authorities to have been found in the Puget Sound area in the fall of 1921. After a conference in Portland in December, it was agreed that the movement of currants and gooseberries and white pines would be prohibited within Western Washington, and that the eradication of cultivated black currants would be attempted with the help of federal funds. The federal office of Blister Rust Control put on quarantine officers to intercept shipments in violation of these orders, and they also put on scouts to locate any additional infections that might be found within the state. They also paid the salaries of six men to secure the eradication of black currants, particularly in the Puget Sound area, under the direction of the District Inspector at Everett.

This work was continued all through the summer of 1922, and the counties of San Juan, Island, Skagit, Snohomish, Mason, Pacific, Clallam, Jefferson and most of Whatcom have had all of the cultivated black currants removed. It is expected that the eradication of black currants will be completed in all the counties bordering Puget Sound before April 1, 1923.

Scouting this summer has established the fact that the White Pines in British Columbia are very seriously infected, and infections have been found on black currants in about fifty places in the Puget Sound District and also in the Willapa Harbor and Grays Harbor sections, but the infection on the white pine has been found only in one place in this state, namely, at Blaine, very close to the Canadian line. As the black currant has proven to be the most dangerous carrier of the White Pine Blister Rust that we have, we are in hopes that the eradication of the black currant under the arrangements mentioned will rid us of this dreaded disease.

CRANBERRY WORK.

Another line of special activity has been the work among the cranberry bogs in Pacific and Grays Harbor Counties. This work was carried on particularly with the help of Pacific County and state funds in both 1921 and 1922. The foundation work for the clean-up campaign was laid in 1921 and in 1922 the department was particularly successful in getting all of the bogs cared for. Two or three small bogs were plowed up, about sixty-five acres were burnt over to kill the pests and diseases and all of the rest were sprayed. This should give the bogs which are left an excellent fresh start towards keeping their crop clean this coming year.

COMMERCIAL CERTIFICATE SERVICE.

For several years prior to 1921, the horticultural inspectors in the apple districts have issued a commercial certificate of inspection or report on car lots of fruits or vegetables, and a fee was charged for this service, though there was no specific law covering this work. The 1921 session of the Legislature, however, gave us legal authority to issue such a certificate that would be prima facie evidence in any court in the state. Under this law arrangements were made to issue a certificate of inspection similar to that in use by the Federal Department at receiving points. The Supervisor of Horticulture took the training at Chicago and a federal man was detailed to help unify the work. As a result the certificate work immediately became a more valuable help to the growers and shippers and the new type of certificate was put into effect in all parts of the state except in the Wenatchee District. About 13,000 car loads of fruits and vegetables were inspected and certified during the 1921 season, about half of which carried the new type of certificate.

The work was so successful that the same type of certificate was put into use in 1922 in all parts of the state shipping fruits and vegetables, and a co-operative agreement was made with the Federal Department of Agriculture under a new federal statute which provided that these certificates would be prima facie evidence in all courts of the United States. This agreement provided that the work be carried under joint state and federal supervision, and for the present we have an arrangement whereby part of the fees for the inspection are set aside by the counties to pay the cost of supervision. The demand for this service has made it necessary to put on about seventy extra inspectors, and, of course, this has necessitated a great deal of extra training and supervision which our present appropriation did not provide for. A less cumbersome system of handling the fees and a larger appropriation to take care of the supervision of this work are urgently needed.

AGRICULTURAL FAIRS.

As has been customary in the past, many of our men have spent some time in helping out with the agricultural fairs in various parts of the state. During 1922 we have not done as much of this as the public demanded, since, if we had, it would have seriously interfered with our other work. The time given, however, has been well spent, for in addition to the exhibits which have been put on, showing the grading and standardization of fruits and vegetables and the control of pests and diseases, some of the men have encouraged and helped in the management of these fairs, thus bringing together excellent demonstrations of what the best care of fruits and vegetables will produce. Many of the members of the Division have also acted as judges at a number of fairs.

GRADE AND PACK CONFERENCES.

As required by the Horticultural Law, as amended in 1921, the Grade and Pack conference for both fruit and vegetables has been held in December of each year. These conferences have as usual been held in conjunction with the State Horticultural Association meeting at Spokane, where various

members of the department have helped in disseminating information about better fruit and vegetable growing and grading. In 1921 we were particularly fortunate in getting an agreement about the apple and potato grades without the usual friction and dissension. Under the present law, however, it is necessary to call a meeting each year to re-open the question of fruit and vegetable grades. The grades have been well enough established by this time, so that I believe the Northwest would be better off if the law were changed so that a hearing would not be required each year, but still the law should be such that changes could be made in the grade rules if there was sufficient reason for them.

PROSECUTIONS.

As a rule the fruit growers of the state realize the necessity of sending out of the state only fruits of uniformly high standards. Occasionally, however, we have reason to prosecute a grower, dealer or by-products plant because it insists on breaking the law in regard to mis-branding fruits or vegetables or the sale of infected fruit. Two by-products plants have paid fines for retailing wormy fruits, and a few firms have done the same for mis-branding. We have, however, lost a number of very important cases, mainly either because the local prosecuting attorney was not familiar with the horticultural law and the method of handling these cases, or because they could not find time to take them up, or because of local influence they did not care to push the cases. This situation has been bad for the morale of the members of the department, and even though by far the larger majority of fruit growers want the standards maintained the inspectors do not feel that they have the backing of the proper authorities in enforcing the law. I would, therefore, recommend that the Department of Agriculture make some arrangement to have an assistant of the Attorney General detailed to handle all of its cases including those of other divisions. This has been found to work out successfully in other states and should be welcomed by local prosecuting attorneys as it relieves them of some work and some local embarrassment.

STATISTICS.

In addition to the other activities of the inspectors above mentioned they have collected considerable data bearing on the horticultural industry, which is of interest and value. The following tabulations show the activities of the inspectors in detail during the biennium. Other statistics cover Crop Reports, Orchard Census, Spray Materials Used, Greenhouse Report, Apple Storage Report, Nursery Shipments, By-products Report, Lists of By-Product Factories, and Lists of Licensed Nurseries.

DISTRICT HORTICULTURAL INSPECTORS.

Dist.	Name.	Address.	Counties.
1.	John B. Wiley	Walla Walla, Wash., Court House	Columbia, Walla Walla, Garfield, Asotin, Whitman.
2.	F. E. Bailey	Spokane, Wash., Court House	Spokane, Stevens, Pend O'Reille, Ferry, Lincoln.
3.	W. P. Brown	Prosser, Wash., Court House	Benton, Franklin, Adams.
4.	F. C. Nielsen	Wenatchee, Wash., Court House	Chelan, Douglas, Okanogan, Grant.
5.	W. L. Close	Yakima, Wash., Court House	Yakima, Kittitas.
6.	R. B. Phipps	Vancouver, Wash., 507½ Main Street	Clarke, Skamania, Cowlitz, Klickitat, Wahkiakum.
7.	Theo. Albert	Chehalis, Wash.	Thurston, Mason, Lewis, Grays Harbor, Pacific.
8.	Henry Huff	Sumner, Wash.	Pierce, Kitsap, Clallam, Jefferson.
9.	J. C. Eakle	Seattle, Wash., 417 County-City Bldg.	King.
10.	C. O. Weiss	Everett, Wash., Chamber of Commerce	Island, San Juan, Whatcom, Skagit, Snohomish.

TABULATED REPORT OF THE ACTIVITIES OF THE DISTRICT INSPECTORS 1921.

Districts 1 to 10 Inclusive.

District	District Inspectors	DAYS IN		Bulletins & Circulars sent Out	MILEAGE			Acres Inspected Orchards	NURSERIES		Letters sent out	Farms Visited	PACKAGES		CARLOTS	
		Office	Field		Auto	Rail	Other		Acres	No.			Inspected	Condemned	Inspected	Condemned
1	Wiley	49½	237½	100	5,811	973	....	......	....	....	....	153	......	......	....	....
2	Kelley Bailey	101	213½	922	8,850	1,150	....	4,744	125	5	779	526	11,670	1,506	70	....
3	Bailey Brown	68	231½	2,211	9,827	2,313	430½	6,210½	287½	....	870	812	74,031	3,096	3	....
4	Darlington	127	160	98	6,594	2,774	573	......	250	....	....	175	250	250	....	....
5	Close	60	236	......	14,564	510	14	5,227	2,000	....	....	227	1,711	1,574	51	3
6	Fletcher Phipps	70½	160	126	6,918	2,118	208	4,980	18	6	294	216	3,454	2,137	46	....
7	Albert	58½	255½	690	12,167	2,780	463	648	....	4	371	....	......	......	....	....
8	Huff	36½	107½	122	11,317	935	1,648	3,729	....	....	477	321	......	......	....	....
9	Rhodes Eakle	31½	254½	210	2,407	......	....	......	....	....	1,402	....	......	......	....	....
10	Weiss	49½	269½	408	9,940	......	....	7,153	266	....	2,581	1,192	19,765	1,381	308	2
	Total	652	2,125½	4,887	88,395	13,373	3,336½	82,691½	2,946½	15	6,774	3,622	111,881	9,938	478	5

TABULATED REPORT OF THE ACTIVITIES OF THE LOCAL INSPECTORS 1921.

Districts 1 to 10 Inclusive.

District	DAYS IN		Bulletins & Circulars sent Out	MILEAGE			Acres Inspected Orchards	NURSERIES		Letters Sent Out	Farms Visited	PACKAGES		CARLOTS	
	Office	Field		Auto	Rail	Other		Acres	No.			Inspected	Condemned	Inspected	Condemned
1......	119¾	463¼	186	951	226	......	465	10½	8	......	1,166	14,705	121	518	......
2......	106	903	65	32,148	986	66	16,986	8	......	......	1,795	130,248	14,961	186	......
3......	18	404½	479	10,719	690	......	1,545	683	......	86	1,415	104,281	6,896	18	4
4......	479	4,560	400	57,574	4,409	1,441	......	1,306	1	......	2,408	4,914,000	164,465	6,723	64
5......	186	2,405	137	61,953	815	268	10,983	534	6	......	2,006	2,150,746	89,513	3,300	17
6......	7	37	......	948	90	......	582	......	......	......	19	....	......	40	......
7......	24½	238	943	8,793	......	58	......	......	......	7	147	....	......	......	......
8......	......	......	......	......	......	......	......	......	......	......	......	....	......	......	......
*9......	......	......	......	......	......	......	......	......	......	......	......	....	......	......	......
10......	21	445½	123	15,844	48	176	3,817	98	......	414	1,660	6,766	228	3	......
Total	961¼	9,451¼	2,833	188,930	7,203	2,004	34,878	2,639½	15	507	10,616	7,320,746	276,184	10,788	85

*Combined with District Inspector's Report.

NURSERY STOCK SHIPMENTS 1921-1922.

COUNTIES	Apples	Pears	P'ches	Plums Prunes	Apricots	Cherries	Quinces	Grapes	Nuts	Raspberries	Blackberries	Strawberries	Misc. Berries	Garden Roots	Ornamental Vines, Trees, Shrubs	Perennials and Misc.
Adams	176	30	6	13	17	77	17	388	....	52	12	....	20	3	308	344
Asotin	135	123	715	99	199	382	8	703	21	336	330	....	841	146	385	26
Benton	25,875	46,416	6,995	24,811	4,622	13,791	21	238,102	17	492	22	58,962	1,727	63,549	14,455	1,377
Chelan	27,204	33,716	7,384	8,492	18,340	39,172	218	2,605	39	4,345	331	2,750	2,778	106	7,886	150
Clallam	149	66	7	121	12	128	4	49	1	110	24	....	81	2	175	56
Clarke	846	93	68	21,976	9	78	17	114	48	710	689	4,262	1,847	757	531	225
Columbia	2,512	253	423	151	34	59	1	143	4	50	50	1,303	221	....	235	1
Cowlitz	156	50	18	46	8	116	1	43	11	8	18	15,862	56	1,225	168	289
Douglas	368	7	1,217	8	5,171	16	74	20	....	....	....	100	83	....	24	14
Ferry	235	49	54	72	30	75	1	19	4	49	....	1,500	425	14	51	34
Foreign	810	3	3,035	5,582	5,517	129	....	4,232	235	107	4	51	3,326	....	410	27
Franklin	383	30	57	31	176	166	....	970	6	200	18	500	578	440	304	10
Garfield	119	14	43	46	22	70	....	39	....	160	64	300	99	55	88	41
Grant	368	27	1,139	82	1,622	95	48	514	13	1	2	25	451	12	387	112
Grays Harbor	581	150	10	226	....	475	9	49	....	598	323	4,816	3,161	394	1,434	1,090
Island	338	122	33	120	23	221	8	55	12	6	9	100	292	100	108	26
Jefferson	195	21	11	54	1	66	....	10	1	19	5	200	81	112	126	53
King	3,675	4,502	582	1,650	313	5,735	145	1,176	290	19	156	612	7,624	635	10,904	10,398
Kitsap	640	229	45	267	40	133	18	15	11	57	10	125	161	17	194	516
Kittitas	1,838	282	104	325	76	173	5	122	8	6	30	5,050	2,636	341	1,237	195
Klickitat	2,582	1,376	74	537	64	197	4	366	20	158	91	5,500	198	485	475	423
Lewis	1,410	446	332	561	11	623	41	242	62	573	297	1,819	2,177	802	2,548	697
Lincoln	483	42	237	86	125	158	2	85	....	140	31	....	558	106	1,093	146
Mason	100	19	6	18	....	86	....	12	3	48	4	512	164	858	23	43
Okanogan	43,700	4,233	11,360	5,526	16,418	405	236	4,208	101	14,149	246	3,350	2,136	295	874	99
Pacific	184	13	9	43	1	17	1	2	....	36	16	11,513	487	3,144	180	143
Pend Oreille	567	74	17	160	14	137	5	45	....	....	....	1,000	739	15	148	14
Pierce	2,656	621	190	1,237	88	2,949	124	314	54	1,260	28	2,656	1,450	1,958	3,434	2,645
San Juan	31	5	10	7	....	109	2	23	1	1	8	....	12	171	7	7
Skagit	809	220	154	326	13	810	15	144	8	121	104	112	823	120	1,061	78
Skamania	271	481	588	20	....	130	2	23	2	1,000	8	....	913	413	252	....
Snohomish	2,215	1,501	306	1,200	91	2,449	57	1,076	51	275	49	8,650	3,172	780	2,084	800
Spokane	8,974	2,593	2,575	3,019	1,073	1,497	61	6,552	60	3,777	1,019	18,912	11,675	1,325	17,706	5,228
Stevens	3,561	433	1,234	779	399	1,067	13	734	11	195	14	650	3,122	221	898	113
Thurston	799	200	130	314	7	384	10	48	11	23	85	1,962	1,687	620	465	687
Wahkiakum	10	....	....	6	88	5	....	....	....	....	3	1,550	18	179	45	44
Walla Walla	3,097	122	624	3,037	179	809	16	7,227	33	106	14	14,200	3,702	11,022	1,155	1,058
Whatcom	796	608	59	330	15	842	15	61	22	32	1,022	4,953	1,329	87	675	427
Whitman	1,079	457	423	688	2,049	502	3	918	37	52	8	8,700	3,879	318	2,357	522
Yakima	48,190	73,357	16,836	21,652	7,669	106,643	273	84,513	1,266	11,702	5,908	7,447	36,261	62,836	33,233	2,206
Total	187,112	172,984	50,110	103,713	64,486	181,016	1,465	355,961	2,463	40,962	10,092	185,004	100,400	153,663	108,072	30,306

NOTE: These figures represent for most part the notices received from nurseries of shipments in the State. Some licensed nurseries forgot to send these notices in regularly, and outside nurseries sent none. The total nursery stock shipments are, therefore, approximately double these figures for trees, and the berry plant figures are several times these numbers. Practically all of the nursery stock shipped was inspected by state inspectors at one place or another.

FRUIT CROP REPORT FOR 1920.

(In Carloads)

DISTRICT	Apples	Pears	Peaches	Prunes Plums	Cherries	Strawberries
1.	352½	17½	74	272	113½	12½
2.	1,952	19	14	40	6	....
3.	806	29	....	10	3	25
4.	9,597	611	246	75	117	....
5.	7,792	1,275	130	130	47	....
6.	438	28	....	....	14	78
7.	39	3	....	5	6	2
8.	4	2	....	500	2	22
9.	115	31	5	11	109	150
10.	29	42	....	24	40	19
Total	21,102½	2,057½	469	1,067	457	308

DISTRICT	Apricots	Mixed Fruits	Fresh Raspberries	Blackberries	Loganberries	Gooseberries	Currants	Grapes
1.	6	60	......	......	......	......	......	1
2.	......	66	......	......	......	......	......	......
3.	......	......	......	......	......	......	......	2
4.	72	......	......	......	......	......	......	......
5.	4	......	......	......	......	......	......	30
6.	½	......	1	4	2	......	......	......
7.	......	......	1	16	1	½	1	......
8.	......	......	42	20	......	......	......	......
9.	......	......	37	65	40	7	11	1
10.	½	......	16	23	5	2	2	2
Total	83	126	97	128	48	9½	14	34

Name of Company and Location of Plant.	Kind of Plant.
Rupert Co., A., No. Puyallup	Cannery
Salter's Cider Works, Spokane	Cider Mill
Schneider & Co., F., Seattle	Cider Mill
Seattle & Puget Sound Packing Company, Seattle	Cannery
Sedro Woolley Cannery, Sedro Woolley	Cannery
Seiter's Cider Works, Spokane	Cider and Vinegar
Selah Fruit Growers Inc., Selah	Evaporator
Shepherd Fruit Products Co., Wenatchee	Evaporator
South Bend Canning Co., South Bend	Cannery
Spokane Brewing & Malting Co., Spokane	Cider Mill
Spokane Cider Works, Spokane	Cider Mill
State Penitentiary, Walla Walla Co.	Evaporator
Sunnybrook Cannery, Snohomish	Cannery
Washington Berry Growers, Sumner	Cannery
Washington Dehydrated Food Co., Grandview	Cannery
Washington Dehydrated Food Co., Wenatchee	Cannery
Washington Dehydrated Food Co., Yakima	Evaporator
Webster & Heyl, Seattle	Cider Mill
Yakima Food Products Co., Yakima	Cider and Vinegar
Younglove & Co., Sunnyside	Cannery
Younglove & Co., Tacoma	Cannery
Names Company, Paul, Tacoma	Cider and Vinegar
Baker Company, H. A., Sumner	Cannery

List of Nurserymen Licensed to Do Business in the State of Washington, November 1, 1922.

ADAMS COUNTY.

Kittel, J. C.	Ritzville

BENTON COUNTY.

Freeman, Fred P., (Home Nursery Co.)	Richland
Gardner, J. R., (Gardner's Nursery Co.)	Kennewick
Nickerson, P. E., (Prosser Nurseries)	Prosser
Wray, Horace E., (Kennewick Nursery Co.)	Kennewick

CHELAN COUNTY.

Chelan Greenhouse & Nursery Company	Chelan
Columbia & Okanogan Nursery Company, Inc.	Wenatchee
Milot-Mills Company	Wenatchee
Larner, George Washington	Wenatchee

CLARKE COUNTY.

Cooper, W. I., Route No. 1	Camas
Holton, I. S.	Vancouver
Langlois, E. C., 3504 E. 7th Street	Vancouver
Luepke, Frank, 13th and Washington Streets	Vancouver
Riegle, Emanuel, Route No. 6	Vancouver
Payne, Frank E.	Camas

COWLITZ COUNTY.

Kean, J. T., (Kelso Nursery Co.) Box 31	Kelso

GRAYS HARBOR COUNTY.

Baila, John M.	Aberdeen

CROP ESTIMATE, CARLOT, 1922.

DISTRICT	Apples	Pears	Peaches	Plums & Prunes	Grapes	Apricots	Cherries	Mixed Fruit	Rasp-berries	Black-berries	Straw-berries	Logan-berries	Cran-berries	Mixed Berries
1............	359	5½	25	169½	......	8	92	135	......	......	4	......	......	......
2............	2,485	58	17	39	......	......	4	28	......	......	5	......	......	......
3............	575	50	45	1	7	1	15	35	......	......	7	......	......	......
4............	13,500	411	165	10	......	96	136	231	......	......	......	......	......	......
5............	8,150	1,510	1,200	115	75	20	100	500	5	1	10	......	......	......
6............	707	136	5	9,000,000 lbs.	......	......	......	......	3	3	30	4	......	......
7............	7	3½	......	4½	40	......	3½	......	69	303	431	14	50	......
8............	500	216	......	17	2	......	56	10	714	563	455	69	......	13
9............	225	140	4	125	2	......	175	......	90	35	400	15	......	......
10............	12	7	......	1	......	......	......	......	141	51	127	20	......	......
Total......	26,520	2,537	1,261	482	126	125	581½	939	1,022	956	1,460	122	50	13

ORCHARD CENSUS, BERRY ACREAGE 1922.

DISTRICT	Apples No. Trees	Pears No. Trees	Peaches No. Trees	Plums & Prunes No. Trees	Apricots No. Trees	Cherries No. Trees	Grapes Acres	Nuts No. Trees	Black-berries Acres	Logan-berries Acres	Rasp-berries Acres	Straw-berries Acres	Goose-berries Acres	Mixed Berries Acres
1............	112,699	29,384	69,515	68,063	9,132	25,720	124	979	2	....	11	73	....	19
2............	1,312,542	27,179	21,541	11,615	55	21,084	....	....	....	....	....	150	....	....
3............	480,498	83,900	57,329	20,901	3,380	18,902	200	160	....	....	2	57	....	....
4............	2,395,643	145,106	72,533	24,812	100,564	27,128	5	1,226	....	....	....	....	....	....
5............	2,115,676	572,259	363,783	94,223	23,334	40,589	....	....	....	....	....	....	....	....
6............	850,000	75,000	32,000	750,000	40,000	23,000	250	11,300	....	300	300	700	....	350
7............	38,000	16,500	....	11,500	....	9,000	30	45,000	776	319	450	1,620	95	37
8............	108,874	32,471	....	6,300	....	39,601	10	....	660	311	1,667	1,160	22	41
9............	85,000	58,000	4,200	20,000	550	35,000	35	1,500	950	1,100	900	2,600	550	100
10............	51,013	37,392	633	15,214	323	22,835	....	272	159	367	846	658	38	37
Total......	7,549,945	1,077,190	621,534	1,022,218	177,338	262,859	654	60,437	2,547	2,397	4,176	7,018	705	584

NOTE: This tabulation covers a careful recheck of practically all orchards in the state during the 1922 season by the Local Horticultural Inspectors. (Also cranberries—600 A.)

Waight, Charles H., 6537 Greenwood Ave.	Seattle
Wessman & Strander	Renton Junction
Whitney, F. A., 3846 34th Ave. W.	Seattle
Wylie, Thomas, 5138 Holly Street	Seattle
Yabuki, Kameji, Box 70	Houghton
Yabuki, Terumatsu, R. F. D., Box No. 75	Bellevue
Yokes, Rudolph T., 5422 California Ave.	Seattle
Anderson, H. P. (University Floral Shop), 4309 14th Ave. N. E.	Seattle
Greene, J. A., and Frankie L. (Greene's Nursery), 3104 W. McGraw Ave.	Seattle
Sandved, Peder, 1803 39th St. N.	Seattle
Sherbrooke, W. E.	Kirkland
Showers, C. W., and Runge, J. E., (Floristan Dahlia Gardens) Route No. 2	Kent
Stuber & Richardson	Bryn Mawr
Leissler, Fred (Apple Blossom Place Nursery), Route 6, Box 429	Seattle
Regalia, Joseph, 450 N. 34th Street	Seattle
Sandahl, Eugene N., (The Burdett Co.) 1st & Denny Way	Seattle
Flagg, A. B., (Evergreen Nursery)	Medina

KITSAP COUNTY.

Horikoshi, Hatsuziro, R. F. D., Box 86	Port Blakeley
Katayama, Isasaburo, R. F. D., Box 56	Port Blakeley
Moore, Benjamin F., and Beulah I.,	Poulsbo
Nakagawa, Toyaichi, R. F. D. No. 1, Box 68	Port Blakeley
Nakamura, H. M.	Poulsbo
Okamoto, Shikatado, P. O. Box 146	Winslow
Olson, E. L.	Port Blakeley
Seko, Zenmatsu, R. F. D. Box 77	Port Blakeley
Schricker, Frank C., (Olympic Flower Shop) 5th and Pacific	Bremerton
Takayoshi, Seinosuke, P. O. Box 37	Port Blakeley
Urban, E. H., 212 Second Street	Bremerton

KITTITAS COUNTY.

Moffet, Frederick I., R. F. D. No. 1	Ellensburg

KLICKITAT COUNTY.

Mount Adams Nurseries	Husum
Wray, E. P., (White Salmon Nursery)	White Salmon

LEWIS COUNTY.

Leake, W. A.	Centralia
Wibra, Geo. I., 1530 Market St.	Chehalis

MASON COUNTY.

Somers, Frank S., and Charles, Jr., (Island Belle Nursery)	Detroit
Eckert Fruit Company	Detroit

OKANOKAN COUNTY.

Mohler, William, (Okanogan Valley Nurseries)	Tonasket
Johnson & Thayer, Box 94	Okanogan

PEND OREILLE COUNTY.

Kiser, E. A.	Tiger

AMOUNTS OF SPRAY MATERIALS USED IN 1921.

District	LIME SULPHUR			ARSENATE OF LEAD			BLACK LEAF 40 (Nicotine Sulphur)		PARIS GREEN		JONSON'S EUREKA		OIL		
	Dry Pounds	Liquid Barrels	Price	Dry Pounds	Liquid Pounds	Price	Pounds	Price	Dry Pounds	Price	Liquid Gallons	Price	Dormant Barrels	Distillate Barrels	Price
1	....	1,370	$10,960 00	1,200	88,062	$19,554 00	5,922	$1,230 00	50	$37 50	84	$315 00	....	....	....
2	90,000	785	18,714 00	356,700	......	64,736 00	610	842 00	100	70 00	507	6,592 00	880	....	$19,860 00
3	6,100	1,138	11,593 00	135,742	......	28,406 00	9,792	13,464 00	......	....	......	....	146	....	2,306 00
4	70,000	4,992	49,432 00	374,622	17,775	72,956 00	2,362	3,012 00	......	....	......	....	42	152	5,002 00
5	162,575	15,976	106,842 00	1,156,857	......	229,871 00	8,935	16,708 00	......	....	1,800	14,300 00	134	528	10,444 00
6	....	600	5,100 00	....	......	....	....	....	......	....	......	....	....	....	....
7	200	6	71 00	....	......	....	....	....	......	....	......	....	....	....	....
8	....	......	....	....	......	....	....	....	......	....	......	....	....	....	....
9	....	215	2,688 00	3,700	......	1,850 00	5,624	7,311 00	......	....	......	....	....	....	....
10	15,477	188	3,428 00	335	......	60 00	....	....	......	....	......	....	....	....	....
Total	344,352	25,270	$208,828 00	2,029,156	105,837	$416,933 00	32,033	$42,567 00	150	$107 50	2,391	$21,207 00	1,202	680	$37,612 00

MISCELLANEOUS

	Quantity	Value
Radium Oil	3,200 gal.	$2,620 00
B. T. S.	49,019 lbs.	4,902 00
Casien Spreader	8,225 lbs.	3,236 00
Atomic Sulphur	36,805 lbs.	2,944 00
Calicum Arsenate	21,000 lbs.	4,620 00
Lye	4,500 lbs.	562 50

AMOUNTS OF SPRAY MATERIAL USED 1922.

DISTRICT	LIME	SULPHUR	ARSENATE OF LEAD	BLACK LEAF 40	PARIS GREEN	JONSON'S EUREKA	OIL		RADIUM OIL	LIME	SULPHUR	CASIEN SPREADER
	Dry Pounds	Liquid Barrels	Dry Pounds	Quantity Pounds	Dry Barrels	Liquid Gallons	Dormant Barrels	Distillate Barrels	Quantity Barrels	Quantity Pounds	Quantity Pounds	Powder Pounds
1	6,525	1,894	102,848	740	2	24	......	......	2	135	97,200	....
2	90,000	785	356,700	610	100	507	......	......	......	7,700	7,700	....
3	15,000	6,689	77,821	8,180	....	....	......	295	......	......	....	....
4	....	15,153	622,666	2,400	....	....	49	232	70	......	....	6,500
5	100,000	11,000	1,500,000	8,000	....	500	200	300	200	......	....	10,000
6	200	1,000	8,600	80	....	....	400	......	......	......	....	....
7	3,500	74	450	980	....	5	......	......	......	......	....	....
8	3,750	195	1,825	210	....	....	1	......	......	......	....	....
9	34,812	460	4,189	4,240	20,000	....	......	......	......	......	....	....
10	16,635	8,607	628	....	....	....	......	......	......	......	....	....
Total	270,422	45,857	2,675,227	20,440	20,102	1,036	650	827	272	7,835	106,900	16,500

MISCELLANEOUS

B. T. S. (pounds)	88,400
Fish Oil Soap (pounds)	1,620
Blue Stone (pounds)	1,600
Bordeaux Mixture (pounds)	80,750
Corrosive Sublimate (pounds)	592
Atomic Sulphur (pounds)	45,200
Lye (pounds)	1,816

GREEN HOUSES 1921.

DISTRICT	Assessed Valuation	Square Feet of Glass	Volume of Business
1	$75,650 00	246,290	$127,200 00
2	97,122 75	352,120	193,700 00
3	....	....	....
4	6,570 00	30,000	49,587 00
5	40,000 00	80,000	90,000 00
6	6,000 00	10,080	7,800 00
7	46,000 00	70,430	63,000 00
8	20,000 00	298,000	130,000 00
9	97,180 00	441,425	275,900 00
10	....	....	....
Total	$388,522 75	1,543,345	$937,187 00

GREENHOUSE REPORT 1922.

DISTRICT	Number	Assessed Valuation	Square Feet of Glass	Volume of Business Transacted Yearly
1	17	$91,675 00	307,366	$157,900 00
2	17	96,822 75	383,120	220,700 00
3	2	3,000 00	2,400	3,000 00
4	2	10,440 00	48,000	41,350 00
5	9	86,000 00	69,750	75,000 00
6	4	4,200 00	18,750	12,500 00
7	6	31,000 00	103,000	51,000 00
8	17	24,250 00	317,250	153,500 00
9	75	125,100 00	968,640	360,850 00
10	18	9,610 00	163,701	62,400 00
Totals	167	$482,097 75	2,382,577	$1,257,200 00

1921 STORAGE REPORT, BOXES.

DISTRICT	Common	Cold	Total
1	241,016	75,600	316,616
2	80,000	....	80,000
3	448,000	62,000	510,000
4	4,989,020	502,400	5,491,420
5	5,411,770	2,538,510	7,950,280
6	6,000	....	6,000
7	627,900	152,000	779,900
8	79,300	....	79,300
9	10,500,000	1,401,308	11,901,308
10	791,000	183,160	974,160
Totals	23,174,006	4,914,918	28,088,984

STORAGE REPORT 1922.

DISTRICT	KIND OF CONSTRUCTION		Capacity
	Common	Iced Storage	
1	403,040	114,912	517,952
2	1,566,300	119,500	1,685,800
3	483,000	137,000	620,000
4	5,489,020	502,400	5,991,420
5	5,611,770	2,638,510	8,250,280
6	140,000	....	140,000
7	14,675	3,530	18,205
8	35,000	53,991	88,991
9	21,001,974	2,802,616	23,804,590
10	2,299,773	366,320	2,666,093
Totals	37,044,552	6,738,779	43,783,331

BY-PRODUCTS AND CANNING REPORTS IN TONS 1921.

DISTRICT	Apples.	Pears.	Cherries.	Prunes. Plums.	Grapes.	Black-berries.	Straw-berries.	Rasp-berries.	Logan-berries.	Goose-berries.	Huckle-berries	Currants.	Cucumbers.	Rhubarb.	Beets.	Spinach.	Cabbage.	Beans.	VALUE
1	1,377	43	153	2															$31,300 00
2	5,528																		45,611 50
3	1,545				230.8														25,263 00
4	13,018																		107,140 00
5	25,487	2,329	175.6										209			234			312,824 00
6	67	38	33.2	210.5		8.1	12.9												14,865 00
7	2,442	1,042	158	5		781	6	36	23	26	26			23					129,220 00
8	4,220	360	12			2,596	149	288	58	2	12	4	512		73		190		284,950 00
9	3,287	349									36								65,941 00
10	5,629	856	247	33.5	6.5	684	266	345	46	27	9	8¼		12	47			319	293,943 00
Totals	75,018	5,017	778.8	251.0	237.3	4,069.1	433.9	699	127	55	83	12¼	721	35	120	234	190	319	$1,311,057 50

ESTIMATE BY-PRODUCTS REPORT IN TONS 1922.

DISTRICT	Apples	Pears	Peaches	Plums and Prunes	Cherries	Grapes	Mixed Fruits	Straw-berries	Black-berries	Rasp-berries	Mixed Berries	Rhu-barb	Beans	Mixed Vege-tables
1	868			375	150									600
2	5,528													
3	160					142½								
4														
5	15,000	5,000	300											900
6	2,100			554				254	66	14	30			
7	175	100			70			100	226	60	48	25		
8	3,283	1,936		63	164½		5	311	2,077	1,078	45	38	30	775
9	2,267	485		30	35	39		100	90	100	20			2,000
10	5,865	1,025	10	53	415			675	602		144	18	600	54
Totals	35,246	8,546	310	1,075	834½	181½	5	1,440	3,151	1,252	287	81	630	4,329

NURSERY STOCK SHIPMENTS 1920-1921.

COUNTIES	Apples	Pears	P'ches	Plums Prunes	Apricots	Cherries	Quinces	Grapes	Nuts	Raspberries	Blackberries	Strawberries	Misc. Berries	Garden Roots	Ornamental Vines, Trees, Shrubs	Perennials and Misc.
Adams	....	6	75	2	6	6	....	....	....	....	....	....	....	....	4	....
Asotin	110	21	515	102	82	641	....	57	36	100	....	....	322	....	25	....
Benton	32,036	4,011	1,277	266	4	39	....	42	75	350	10	3,237	156	14	385	2,357
Chelan	3,894	9,848	1,099	789	1,109	86	....	97	22	126	1	2,825	2,050	....	1,892	145
Clallam	429	177	29	199	25	425	5	57	3	6,791	842	17,997	56,426	....	353	26
Clarke	629	367	363	3,607	46	578	23	1,096	38	190	66	2,487	3,790	236	524	392
Columbia	212	....	6	....	....	2	....	....	2	1	....	750	12	....	3	186
Cowlitz	270	80	18	86	19	46	7	72	15	100	17	1,127	941	76	212	137
Douglas	....	7	2	....	....	6	....	....	....	....	....	....	....	....	....	....
Ferry	....	....	....	....	....	....	....	....	....	....	....	250	....	....	....	....
Foreign	....	....	....	....	....	....	....	....	....	....	....	....	....	....	136	85
Franklin	20	6	12	18	10	53	....	36	....	36	6	1,336	135	30	87	300
Garfield	....	....	17	....	....	....	....	....	....	....	60	....	....	3	6	15
Grant	214	2	16	10	....	28	....	5	....	....	....	300	....	....	72	....
Grays Harbor	506	120	6	195	....	415	6	10	8	186	87	1,867	4,184	499	1,365	488
Island	175	41	15	67	13	118	4	58	7	....	1	1,775	5,237	....	55	9
Jefferson	89	18	5	10	....	70	....	3	....	1,206	....	2,412	823	62	96	116
King	3,259	563	165	895	204	13,890	76	253	90	16,062	444	17,151	28,011	10,266	3,750	649
Kitsap	636	274	110	425	59	758	28	13	11	17	73	4,531	4,335	15	916	458
Kittitas	148	13	8	17	14	87	....	28	....	111	18	325	179	12	211	218
Klickitat	179	9	18	15	6	34	3	50	....	30	21	896	127	100	176	259
Lewis	796	347	31	315	9	905	27	107	29	346	36	3,828	5,023	453	693	440
Lincoln	59	6	40	14	14	48	....	4	....	1	16	400	....	....	12	5
Mason	8	....	....	1	....	2	....	1	....	....	....	100	700	....	17	1,014
Okanogan	1,012	105	37	18	20	12	....	2	3	10	....	1,151	6,096	....	10	....
Pacific	348	113	1	133	3	82	2	1,029	....	188	35	2,125	2,092	....	352	706
Pend Oreille	31	2	2	3	1	7	....	....	....	5	....	475	....	....	6	....
Pierce	1,409	654	110	1,138	1,022	23,716	63	294	24	51	551	12,809	26,176	....	4,119	685
San Juan	4	200	....	2	....	6	....	1	2	12	1,000	3,500	1,526	....	30	100
Skagit	947	314	58	475	29	1,067	23	74	4	1,610	134	3,226	14,065	274	2,288	122
Skamania	529	549	8	10	....	49	....	40	15	15	....	612	49	....	15	631
Snohomish	1,871	807	186	1,279	90	1,422	53	209	106	641	1,077	7,163	5,718	1,449	1,735	1,649
Spokane	1,964	1,111	130	354	13	868	34	604	23	1,101	20	24,850	158	....	10,840	2,200
Stevens	110	10	41	87	9	20	3	15	2	1	....	1,850	66	....	24	....
Thurston	653	207	27	347	6	1,852	28	184	22	149	32	2,061	809	3,337	396	203
Wahkiakum	....	....	....	6	....	....	....	....	1	162	4	1,686	12	124	48	194
Walla Walla	520	100	125	315	26	128	15	183	45	47	46	6,100	679	680	626	206
Whatcom	2,219	830	62	928	14	1,989	21	82	10	116	19	9,882	2,476	465	1,180	303
Whitman	2,368	643	593	300	683	975	27	186	23	74	....	4,965	4,357	....	2,548	232
Yakima	28,215	15,090	961	20,679	2,477	1,787	23	734	1,208	1,348	1,912	34,806	26,100	265	7,050	2,053
Total	85,808	36,651	6,167	23,117	6,022	51,087	471	5,023	1,819	32,208	6,528	180,436	204,880	18,308	42,272	10,744

NURSERY STOCK SHIPMENTS 1921-1922.

COUNTIES	Apples	Pears	P'ches	Plums Prunes	Apri-cots	Cher-ries	Quinces	Grapes	Nuts	Rasp-berries	Black-berries	Straw-berries	Misc. Berries	Gar-den Roots	Orna-mental Vines, Trees, Shrubs	Peren-nials and Misc.
Adams	176	80	6	13	17	77	17	388	....	52	12	....	20	8	308	344
Asotin	135	123	715	99	199	382	8	703	21	330	330	....	841	146	385	26
Benton	25,875	46,416	6,995	24,811	4,622	13,791	21	238,102	17	492	22	58,962	1,727	63,549	14,455	1,377
Chelan	27,204	38,716	7,384	8,492	18,340	39,172	213	2,605	39	4,345	331	2,750	2,778	106	7,886	150
Clallam	149	66	7	121	12	128	4	49	1	110	24	....	81	2	175	56
Clarke	346	93	68	21,976	9	78	17	114	48	710	689	4,262	1,347	757	531	225
Columbia	2,512	253	423	151	34	59	1	143	4	50	50	1,303	221	....	235	1
Cowlitz	156	50	18	46	8	116	1	43	11	8	18	15,862	56	1,225	168	289
Douglas	363	7	1,217	8	5,171	16	74	20	....	....	....	100	33	....	24	14
Ferry	235	49	54	72	30	75	1	19	4	49	....	1,500	425	14	51	34
Foreign	810	3	3,035	5,582	5,517	129	....	4,232	235	107	4	51	3,326	....	410	27
Franklin	383	30	57	31	176	166	....	970	6	200	18	500	578	440	304	10
Garfield	119	14	43	46	22	70	....	39	....	160	64	300	99	55	88	41
Grant	368	27	1,139	82	1,622	95	48	514	13	1	2	25	451	12	387	112
Grays Harbor	581	150	10	226	....	475	9	49	....	598	323	4,816	3,161	394	1,434	1,080
Island	838	122	33	120	23	221	8	55	12	6	9	100	292	100	108	26
Jefferson	195	21	11	54	1	66	....	10	1	19	5	200	81	112	126	53
King	3,675	4,502	582	1,650	313	5,735	145	1,176	290	19	156	612	7,624	635	10,904	10,398
Kitsap	640	229	45	267	40	133	18	15	11	57	10	125	161	17	194	516
Kittitas	1,838	282	104	325	76	178	5	122	8	6	30	5,050	2,636	841	1,237	195
Klickitat	2,582	1,376	74	537	64	197	4	366	20	158	91	5,500	198	485	475	423
Lewis	1,410	446	332	561	11	623	41	242	62	573	297	1,819	2,177	802	2,548	697
Lincoln	483	42	237	86	125	158	2	85	....	140	31	....	558	106	1,093	146
Mason	100	19	6	18	....	86	....	12	3	48	4	512	164	858	23	43
Okanogan	43,700	4,233	11,360	5,526	16,418	495	236	4,208	101	14,149	246	3,350	2,136	295	874	99
Pacific	184	13	9	43	1	17	1	2	....	36	16	11,513	487	3,144	180	143
Pend Oreille	567	74	17	160	14	137	5	45	....	....	....	1,000	739	15	148	14
Pierce	2,656	621	190	1,237	38	2,949	124	314	54	1,260	28	2,656	1,450	1,958	3,434	2,645
San Juan	31	5	10	7	....	109	2	23	1	1	3	....	12	171	7	7
Skagit	809	220	154	326	13	810	15	144	8	121	104	112	823	120	1,061	78
Skamania	271	481	588	20	....	130	2	23	2	1,000	3	....	913	413	252	....
Snohomish	2,215	1,501	306	1,200	91	2,449	57	1,076	51	275	49	8,650	3,172	780	2,084	800
Spokane	8,974	2,593	2,575	3,019	1,078	1,497	61	6,552	60	3,777	1,019	13,912	11,675	1,325	17,705	5,228
Stevens	3,561	433	1,234	779	399	1,067	13	734	11	195	14	650	3,122	221	898	113
Thurston	799	200	130	314	7	384	10	48	11	23	35	1,962	1,687	620	465	687
Wahkiakum	10	....	....	6	88	5	....	....	....	....	3	1,550	18	179	45	44
Walla Walla	3,097	122	624	3,037	179	809	16	7,227	33	106	14	14,200	3,702	11,022	1,155	1,058
Whatcom	796	608	59	330	15	842	15	61	22	32	1,022	4,953	1,329	87	675	427
Whitman	1,079	457	423	688	2,049	502	3	918	37	52	8	8,700	3,879	818	2,357	522
Yakima	48,190	78,357	16,836	21,652	7,669	106,643	273	84,513	1,266	11,702	5,908	7,447	36,261	62,836	33,233	2,208
Total	187,112	172,984	59,110	108,713	64,496	181,016	1,465	355,961	2,463	40,962	10,992	185,004	100,400	153,663	108,072	30,306

NOTE: These figures represent for most part the notices received from nurseries of shipments in the State. Some licensed nurseries forgot to send these notices in regularly, and outside nurseries sent none. The total nursery stock shipments are, therefore, approximately double these figures for trees, and the berry plant figures are several times these numbers. Practically all of the nursery stock shipped was inspected by state inspectors at one place or another.

BY-PRODUCTS PLANTS AND CANNERIES.

October 14, 1922.

Name of Company and Location of Plant.	**Kind of Plant.**
Arlington Cannery, Arlington	Cannery
Baker Cannery Co., Lynden	Cannery
Bellingham Fruit Co., Bellingham	Cannery
Bergoust-Davis & Co., Seattle	Cannery
Blalock Evaporator Co., Walla Walla Co.	Evaporator
Bishop Bros., Seattle	Cider Mill
Buena Evaporating Co., Buena	Evaporator
Burlington Cannery, Burlington	Cannery
California Packing Co., Yakima	Evaporator
Church Manufacturing Co., Kennewick	Cider Mill
Clark-Chelan Co., Chelan	Evaporator
Cloud-Thomas Co., Selah	Evaporator
Coast Conserve Co., Seattle	Cider Mill
Coast Conserve Co., Seattle	Cannery
Columbia Fruit Products Co., Hanford	Evaporator
Cusick's Cider Works., Spokane	Cider Mill
Deem Grear Canning Co., Mossy Rock	Cannery
Dustin Cannery, Asotin County	Cannery
Everett Fruit Products Co., Everett	Cannery
Everson Cannery, Everson	Cannery
Ferguson Cannery, Snohomish	Cannery
Ferndale Cannery Co., Ferndale	Cannery
Fisher Canning Co., Bellevue	Cannery
Hill's Cannery, Asotin County	Cannery
Hood River Cider Store, Seattle	Cider Mill
Huting, E. T., Silver Creek	Evaporator
Inland Cider Works, Spokane	Cider Mill
Inland Products Co., Spokane	Cider Mill
Jones Bros., Yakima	Cider Mill
Keller-Lorenz Co., Spokane	Cider and Vinegar
Lewis County Canning Co., Chehalis	Cannery
Libby, McNeil & Libby, Seattle	Cannery
Libby, McNeil & Libby, Yakima	Cannery
Lummi Bay Packing Co., Bellingham	Cannery
Lust & Walters Processing Co., Yakima	Cannery
Luther Dehydrator, Walla Walla Co.	Evaporator
Martin, F. M., Grandview	Evaporator
Martin, F. M., Zillah	Evaporator
Montesano Packing Co., Montesano	Cannery
Morehouse, C. S., Seattle	Bakery
National Fruit Canning Co., Seattle	Cannery
Northwest Evaporating Co., Cashmere	Evaporator
Northern Pickle Co., Tacoma	Cannery
Olympia Canning Co., Olympia	Cannery
Olympia Canning Co., Port Townsend	Cannery
Oregon Packing Co., Asotin County	Cannery
Oregon Packing Co., Vancouver	Cannery
Pacific Cider & Vinegar Works, Seattle	Cider and Vinegar
Pacific Coast Syrup Co., Seattle	Cannery
Pe Ell Canning Co., Pe Ell	Cannery
Petrie's Cannery, Asotin County	Cannery
Port Angeles Cannery, Port Angeles	Cannery
Porter's Products, Mrs., Seattle	Cider and Cannery
Pride & Co., W. H., Bellingham	Cannery
Puyallup & Sumner Canning Co., Sumner	Cannery
Puyallup & Sumner Fruit Growers Canning Co., Puyallup	Cannery
Randle Canning Co., Randle	Cannery

Name of Company and Location of Plant.	Kind of Plant.
Rupert Co., A., No. Puyallup	Cannery
Salter's Cider Works, Spokane	Cider Mill
Schneider & Co., F., Seattle	Cider Mill
Seattle & Puget Sound Packing Company, Seattle	Cannery
Sedro Woolley Cannery, Sedro Woolley	Cannery
Seiter's Cider Works, Spokane	Cider and Vinegar
Selah Fruit Growers Inc., Selah	Evaporator
Shepherd Fruit Products Co., Wenatchee	Evaporator
South Bend Canning Co., South Bend	Cannery
Spokane Brewing & Malting Co., Spokane	Cider Mill
Spokane Cider Works, Spokane	Cider Mill
State Penitentiary, Walla Walla Co.	Evaporator
Sunnybrook Cannery, Snohomish	Cannery
Washington Berry Growers, Sumner	Cannery
Washington Dehydrated Food Co., Grandview	Cannery
Washington Dehydrated Food Co., Wenatchee	Cannery
Washington Dehydrated Food Co., Yakima	Evaporator
Webster & Heyl, Seattle	Cider Mill
Yakima Food Products Co., Yakima	Cider and Vinegar
Younglove & Co., Sunnyside	Cannery
Younglove & Co., Tacoma	Cannery
Names Company, Paul, Tacoma	Cider and Vinegar
Baker Company, H. A., Sumner	Cannery

List of Nurserymen Licensed to Do Business in the State of Washington, November 1, 1922.

ADAMS COUNTY.

Kittel, J. C.	Ritzville

BENTON COUNTY.

Freeman, Fred P., (Home Nursery Co.)	Richland
Gardner, J. R., (Gardner's Nursery Co.)	Kennewick
Nickerson, P. E., (Prosser Nurseries)	Prosser
Wray, Horace E., (Kennewick Nursery Co.)	Kennewick

CHELAN COUNTY.

Chelan Greenhouse & Nursery Company	Chelan
Columbia & Okanogan Nursery Company, Inc.	Wenatchee
Milot-Mills Company	Wenatchee
Larner, George Washington	Wenatchee

CLARKE COUNTY.

Cooper, W. I., Route No. 1	Camas
Holton, I. S.	Vancouver
Langlois, E. C., 3504 E. 7th Street	Vancouver
Luepke, Frank, 13th and Washington Streets	Vancouver
Riegle, Emanuel, Route No. 6	Vancouver
Payne, Frank E.	Camas

COWLITZ COUNTY.

Kean, J. T., (Kelso Nursery Co.) Box 31	Kelso

GRAYS HARBOR COUNTY.

Balla, John M.	Aberdeen

KING COUNTY.

Adams, J. W., (Richmond Nurseries)	Richmond Beach
Albertson, E., 1704 North 80th Street	Seattle
Baer, Charles H., 6633 Flora Ave	Seattle
Bauer, Christian, 530 28th Ave. No	Seattle
Beall Greenhouse Company, Inc	Vashon
Betz, E. F., P. O. Box 318	Renton
Bladine, E., (Lakeview Rose Gardens) 1601 15th Ave. No.	Seattle
Bonnell, J. J., 2601 E. Galer Street	Seattle
J. A. Boyce Seed Company, 89 Pike Street	Seattle
Carver, E. G., (Seattle Nursery Co.) 4520 Sunnyside Ave.	Seattle
Carver, Gleason A., 2324 No. 50th Street	Seattle
Dupea, Thomas, 3829 Renton Ave	Seattle
Dutton, H. O., 3822 Ashworth Ave	Seattle
Fabi, E. A., 3711 12th Ave. N. E.	Seattle
Fujino, J., (Pacific Floral Co.)	Seattle
M. Furuya Company, 216 Second Ave. So	Seattle
Hamada, Tokijiro, 452 27th Ave. No	Seattle
Heege, Otto, (South Park Nursery) Route 3, Box 17	Seattle
Hollywood Gardens, Inc., 1534 Second Ave	Seattle
Iseri, Ruzo, P. O. Box 36	Bryn Mawr
Harmeling, Stephen J., and Edward, (Island Nursery Co.)	Vashon
Iwasaki, T., P. O. Box 38	Bryn Mawr
Kanada, Shinsaku, 839 Elmgrove St. So. Park	Seattle
Kanno, Shinziro, R. F. D. No. 1, Box 9	Seattle
Kempf, Peter, 3411 Belvedere Ave	Seattle
Kumagai, K., Route No. 6, Box 220	Seattle
Kumasaka, S., R. F. D. No. 6, Box 270	Seattle
Kusumi, Takesaburo, R. F. D., Box 149	Bellevue
Lange, Paul E., 6813 Weedin Place	Seattle
Latona Floral Company, 347 E. 56th Street	Seattle
Lester & Monahan, 8536 Greenwood Ave	Seattle
Malmo & Company, 1900 Sixth Ave	Seattle
Matsuda, Tetsujiro, 6702 14th Ave. N. W.	Seattle
McClimans, Lillian M., 5401 Ravenna Ave	Seattle
McCoy, C. E., 4839 Brandon St	Seattle
Miyamoto, Genzo, Route No. 2, Box 258 A	Auburn
Mochizuki, Bunkichi, 1606 Pike Place	Seattle
Mochizuki, S. Kazuyashi, R. F. D. No. 6, Box 305	Seattle
Mochizuki, Tomitoro, 6702 14th Ave	Seattle
Morgan, Henry C., 1418 Third Ave	Seattle
Morita, M., R. F. D. No. 5, Box 401	Seattle
Morris, Thos., 1910 9th Ave. W	Seattle
Nishitani, H., (Oriental Gardens Co.) R. 1, Box 364	Seattle
Noji, Zenya, (Columbia Greenhouse Co.) 3206 Juneau St.	Seattle
Nomura, Shiyokich, 5115 35th Ave. So	Seattle
O'Brien, Philip D., (Pioneer Floral Co.) 3118 Yesler Way.	Seattle
Paine Brothers, R. F. D. No. 2, Box 797	Seattle
Prentice, Clarence, (Prentice Nurseries) R. No. 2	Kent
Reid, R. T.	Bellevue
Rosaia, P. F., & Geo. P., (Thomas Floral Co.) 1003 3rd Av.	Seattle
Saito, Kumakichi, R. F. D., Box 63	Bellevue
Sano, Fukuo, 1516 40th Ave. No	Seattle
Sheffield, Mrs. Geo., R. F. D. No. 1	Burton
Shimizu, Kamon, P. O. Box 55	Zenith
Soderquist, E., 2029 10th Ave. No	Seattle
Stewart, John G., (Christopher Nurseries) R. 2, Box 215A.	Auburn
Suzuki, Sosaku, P. O. Box 1645	Renton
Suzuki, Y., (Auburn Greenhouses)	Auburn
Uchida, Tadatomo, 602 North 87th St	Seattle
Vashon Garden Company, Inc	Vashon

Waight, Charles H., 6537 Greenwood Ave..................Seattle
Wessman & Strander..........................Renton Junction
Whitney, F. A., 3846 34th Ave. W.......................Seattle
Wylie, Thomas, 5138 Holly Street........................Seattle
Yabuki, Kameji, Box 70...............................Houghton
Yabuki, Terumatsu, R. F. D., Box No. 75...............Bellevue
Yokes, Rudolph T., 5422 California Ave...................Seattle
Anderson, H. P. (University Floral Shop), 4309 14th Ave. N. E. ....Seattle
Greene, J. A., and Frankie L. (Greene's Nursery), 3104 W. McGraw Ave. ....Seattle
Sandved, Peder, 1803 39th St. N. ....Seattle
Sherbrooke, W. E....................................Kirkland
Showers, C. W., and Runge, J. E., (Floristan Dahlia Gardens) Route No. 2..Kent
Stuber & Richardson...............................Bryn Mawr
Leissler, Fred (Apple Blossom Place Nursery), Route 6, Box 429 ....Seattle
Regalia, Joseph, 450 N. 34th Street......................Seattle
Sandahl, Eugene N., (The Burdett Co.) 1st & Denny Way..Seattle
Flagg, A. B., (Evergreen Nursery).......................Medina

KITSAP COUNTY.

Horikoshi, Hatsuziro, R. F. D., Box 86.............Port Blakeley
Katayama, Isasaburo, R. F. D., Box 56............Port Blakeley
Moore, Benjamin F., and Beulah I.,......................Poulsbo
Nakagawa, Toyaichi, R. F. D. No. 1, Box 68.......Port Blakeley
Nakamura, H. M.......................................Poulsbo
Okamoto, Shikatado, P. O. Box 146......................Winslow
Olson, E. L.....................................Port Blakeley
Seko, Zenmatsu, R. F. D. Box 77.................Port Blakeley
Schricker, Frank C., (Olympic Flower Shop) 5th and Pacific ....Bremerton
Takayoshi, Seinosuke, P. O. Box 37................Port Blakeley
Urban, E. H., 212 Second Street....................Bremerton

KITTITAS COUNTY.

Moffet, Frederick I., R. F. D. No. 1.................Ellensburg

KLICKITAT COUNTY.

Mount Adams Nurseries..................................Husum
Wray, E. P., (White Salmon Nursery)..............White Salmon

LEWIS COUNTY.

Leake, W. A...Centralia
Wibra, Geo. I., 1530 Market St.........................Chehalis

MASON COUNTY.

Somers, Frank S., and Charles, Jr., (Island Belle Nursery).Detroit
Eckert Fruit Company..................................Detroit

OKANOKAN COUNTY.

Mohler, William, (Okanogan Valley Nurseries)........Tonasket
Johnson & Thayer, Box 94...........................Okanogan

PEND OREILLE COUNTY.

Kiser, E. A..Tiger

PIERCE COUNTY.

Burglehaus, May S., (Rosecroft Nurseries)	Sumner
Griffiths, F. W., and Lingham, A., (Puyallup Nursery)	Puyallup
Lawler, George, Gardenville	Tacoma
Miethke's Nursery, Route No. 2, Box 56	Tacoma
Pudor, O. M.	Puyallup
Smith, Joe	Long Branch
Turner, Mrs. Charles H., 1211 So. Verde St.	Tacoma
Smith, F. C., (Smith Floral & Nursery) 1716 So. 56th St.	Tacoma
Snyder, W. A., 909 South "L" Street	Tacoma
Benthien, Henry	Tacoma

SKAGIT COUNTY.

Chenoweth, E. B., (Mount Vernon Nurseries)	Mount Vernon

SNOHOMISH COUNTY.

Narrow, John F., (Edmonds Nursery)	Edmonds
Ricketts, W. J., (Snohomish Nursery)	Snohomish
Jensen, Oscar E.	Richmond Beach
Burdett, P. H., (Meadowdale Nursery) R. F. D. No. 1	Edmonds

SPOKANE COUNTY.

Hubenthal, Otto, (Spokane Nursery) S 2009 Grand Blvd.	Spokane
Imus & Klaffenbach, N. 1724 Washington St.	Spokane
Janish, Frank, R. F. D. No. 8	Spokane
McGregor, A., 1528 N. W. Boulevard	Spokane
Othmer, J. N., 1906 Shannon Ave.	Spokane
Spokane Seed Company, Inc.	Spokane
Westlake, T. E., c/o Westlake Public Mkt.	Spokane
Burton, Zolman I., S. 523 Thor Street	Spokane
Harris, Frank L., 4503 N. Lincoln Ave.	Spokane
Roadruck, M. Herbert, 4103 N. Lincoln Ave.	Spokane
Overman's Nursery, 29 Monroe Street	Spokane

STEVENS COUNTY.

Covington, Fred J.	Kettle Falls

THURSTON COUNTY.

Briggs, O. W., (Briggs Fruit Ranch)	Olympia

WALLA WALLA COUNTY.

Santo, Ernest F., (Walla Walla Valley Nursery)	Walla Walla
Young & Lester	Walla Walla
Phillips Floral Company	Walla Walla

WHATCOM COUNTY.

Hopkins, T. R.	Ferndale

WHITMAN COUNTY.

Bade Brothers	College Place

YAKIMA COUNTY.

Appleget, Cyrus M.	Yakima
Draggoo, Eli, (Naches Heights Nursery)	Yakima
Erbland, F. F., Route No. 3, Box 377	Yakima
Hamilton Nursery Company, R. F. D. No. 4, Box 103	Yakima
Irish, A. H., (Shamrock Nursery)	Donald
Oliver, George H., (Yakima Whlse Nursery Co.) Box 1297	Yakima
Smith, A. S., (Fruitvale Nursery) P. O. Box 752	Yakima
Toppenish Nursery Company, Inc.	Toppenish
Washington Nursery Company	Toppenish
Yakima Valley Nursery Company, Inc.	Toppenish

Ingalls, W. D., (Ingalls Nursery Company)	Yakima
Palmerston, O. F., (Yakima Park Landscape Co.)	Yakima
Weimar, W. F.	Tieton
Yakima & Columbia River Nursery Co., 210 Miller Bldg.	Yakima

OUT OF STATE.

Albany Nurseries, Inc.	Albany, Oregon
American Rose & Plant Company	Springfield, Ohio
Benedict Nursery Company, 185 E. 87th St. N.	Portland, Oregon
Butzer, J. J., 188 Front St.	Portland, Oregon
California Nursery Company	Niles, California
Clarke Brothers, 287 Morrison St.	Portland, Oregon
Columbia Nursery Co., Union Ave. N. & Bryant St.	Portland, Ore.
Dreer, Henry A., Inc., 714 Chestnut St.	Philadelphia, Pa.
Elliott Nursery Company, The	Pittsburgh, Pa.
R. & J. Farquhar & Co., 6-9 So. Market St.	Boston, Mass.
Harrisons' Nurseries	Berlin, Maryland
Milton Nursery Co.	Milton, Oregon
Oregon Nursery Company	Orenco, Oregon
Pilkington, J. B., P. O. Box 242	Portland, Oregon
Portland Seed Company, Inc., Front and Yamhill	Portland, Ore.
Portland Wholesale Nursery Co., 971 Sandy Blvd.	Portland, Ore.
Salem Nursery Company, Inc.	Salem, Oregon
Silva-Bergtholdt Company, Inc.	New Castle, California
Stillings & Embry	Lewiston, Idaho
Villa Nurseries, The, R. F. D. No. 1, Box 395	Portland, Oregon
H. S. Galligan, (True-To-Name-Nursery)	Hood River, Oregon
Mountain View Floral Company, 341 E. 72nd St.	Portland, Ore.
Russellville Nurseries, E. 96th and Burnside	Portland, Oregon
Stark Bros. Nurseries & Orchard Co.	Louisiana, Missouri
Wirt, F. N., (Powell Valley Nursery)	Portland, Oregon
D. Hill Nursery Company	Dundee, Illinois
Sonderegger Nurseries & Seed House	Beatrice, Nebraska
Weed Landscape Nursery	Beaverton, Oregon
Bobbink & Atkins	Rutherford, N. J.
Shenandoah Nurseries	Shenandoah, La.
Routledge Seed & Floral Company	Portland, Oregon

DIVISION OF FOODS, FEEDS AND DRUGS.

Honorable E. L. French,
Director of Agriculture,
Olympia, Washington.

Dear Sir: I am submitting herewith the Fifth Biennial Report of the Division of Foods, Feeds and Drugs, covering the period from July 1, 1920, to June 30, 1922. The report includes foods, feeds, fertilizers, drugs, bakery and restaurant inspection.

In the administration of the duties devolving on this Division I have sought to keep constantly in view the policy of the state administration, namely, to accomplish as much work as possible with the least possible expense.

During the biennium ending June 30, 1922, the work of the Food, Feed and Drug Division of the State Department of Agriculture has been carried out with the same ends in view as during the past years, viz., the impartial and thorough enforcement of the statutes placed under the jurisdiction of this division.

The total number of inspections made by the division during the fifth biennium was 31,829, subdivided as follows: Assistant inspections 176, bakeries 343, bottling works 126, butter and egg stores 1,277, cold storage plants, 64, commission houses 1,539, confectioneries 831, creameries and dairies 3, docks-piers, etc., 19, delicatessens 22, drug stores and shopkeepers' stocks 2,230, extract-coffee-spice houses 12, fertilizer plants and stores 142, fish markets 1,092, flour and feed mills and stores 1,553, fruit and vegetable stalls 5,826, grocery and general stores 5,387, hospitals and institutions 12, hotel and boarding house kitchens 18, food manufacturing and packing plants 191, meat markets 4,628, miscellaneous and special inspections 783, public market stalls 1,632, reinspections 225, restaurants, etc., 1,671, seed stores 22, slaughter houses 107, soft drink and ice cream parlors 1,706, storage and warehouses 22, and wholesale houses 170. Notices issued 591, complaints filed 198, and times in court 179. Cooperating with United States Department inspections 21, and special state drug license inspections 57.

Inspections were made of 107 so-called country slaughter houses with the following results: Passed inspection 52, notified to improve conditions 29, closed temporarily 13, and 13 closed permanently because the location was unfit for the purpose and the surroundings not conducive to the manufacture of a wholesome food product.

Bakeries in 54 towns were inspected, 165 being found in good condition, 36 fair and 14 poor. Bakeries having certificates number 150, those not entitled to certificates as they had failed to comply with some of the required conditions 57, certificates taken up 7, bakeries closed 1, and not baking at time of inspection 3, making the total number of inspections 218.

The foregoing inspections were made in 36 counties, covering 398 towns, or, totalling the number of towns visited by each inspector 988 towns were covered—this not including any of the return visits of inspection made by the inspectors to the various towns—and resulted in the condemnation of 1,659,351 cans of canned foods, 375 bottles of foods, 744,564 pounds of bulk foods, 241 packages of package foods, and 34 2/3 dozen of foods sold by count; 253 old and insanitary cooking and baking utensils unfit for use in preparing foods for human consumption; and 1,641 packages of drugs and proprietary medicines; the condemnations totaling 2,406,432 3/4 parcels or units of foods, drugs and utensils.

When possible the above condemned food products were sold for animal food. When not fit for animal food they were utilized in the manufacture of fertilizer or burned, the utensils being destroyed.

During this biennium there were 974 reports returned to this division on samples of foods submitted to the State Chemists for analysis, 471 of which were reported as legal and 486 illegal, with 17 doubtful. Of 14 samples of drugs submitted all were reported legal. Reports of analyses were received on 85 samples of stock feeds, 64 being legal, 14 illegal and 7 doubtful; 14 samples of feed meals were reported as 13 legal and 1 doubtful; 85 samples of poultry feeds were reported as 83 legal, 1 illegal and 1 doubtful, showing a great and marked improvement in stock and poultry feeds over the previous biennium. There were also 63 samples of fertilizers analyzed and reported on as 54 legal, 3 illegal and 6 doubtful. The total number of samples of foods, feeds, drugs and fertilizers submitted to the State Chemists and reported on amounted to 1,235.

Five hundred and fifty-eight brands of stock and poultry feeds have been registered with this division, by 128 firms doing business in this state.

The registrations of fertilizers imported or manufactured in Washington numbered 170 brands, containing 379 ingredients at a fee of $6.00 per ingredient, totaling in revenue to the state $2,274.00.

Complaints filed for the willful violation of food, feed and drugs acts numbered 198, 195 of which have come up for trial with the following results: 11 cases dismissed, 1 dismissed with costs, 15 forfeited bail, 1 convicted without penalty, 6 convicted with suspended sentences, 161 convicted and fined, the number of cases, with 7 appeals, amounting to 202, and the total fines being $6,684.00.

The detailed reports of this Division are on file in the offices of the Department of Agriculture and can be consulted by the public at any time.

Respectfully yours,
WILL H. ADAMS,
Supervisor, Division of Foods, Feeds and Drugs.

NURSERY STOCK SHIPMENTS 1920-1921.

COUNTIES	Apples	Pears	P'ches	Plums Prunes	Apricots	Cherries	Quinces	Grapes	Nuts	Raspberries	Black berries	Strawberries	Misc. Berries	Garden Roots	Ornamental Vines, Trees, Shrubs	Perennials and Misc.
Adams	......	6	75	2	6	6	......	......	......	......	......	......	......	......	4	......
Asotin	110	21	515	102	82	641	......	57	36	100	......	......	322	......	25	......
Benton	82,036	4,011	1,277	266	4	39	......	42	75	350	10	3,237	156	14	385	2,357
Chelan	3,894	9,848	1,099	789	1,109	86	......	97	22	126	1	2,825	2,050	......	1,892	145
Clallam	429	177	29	199	25	425	5	57	3	6,791	842	17,997	58,426	......	353	26
Clarke	629	367	363	3,607	46	578	23	1,098	38	190	66	2,487	3,790	236	524	392
Columbia	212	......	6	......	......	2	......	......	2	1	......	750	12	......	8	186
Cowlitz	270	80	18	86	19	46	7	72	15	100	17	1,127	941	76	212	137
Douglas	......	7	2	......	......	6	......	......	......	......	......	......	......	......	......	......
Ferry	......	......	......	......	......	......	......	......	......	......	......	250	......	......	......	......
Foreign	......	......	......	......	......	......	......	......	......	......	......	......	......	......	136	85
Franklin	20	6	12	18	10	58	......	36	......	36	6	1,336	185	30	87	300
Garfield	......	......	17	......	......	......	......	......	......	......	60	......	......	8	6	15
Grant	214	2	16	10	......	28	......	5	......	......	......	300	......	......	72	......
Grays Harbor	505	120	6	195	......	415	6	10	3	186	87	1,867	4,184	499	1,365	488
Island	175	41	15	67	18	118	4	58	7	......	1	1,775	5,237	......	55	9
Jefferson	89	18	5	10	......	70	......	8	......	1,206	......	2,412	823	62	96	116
King	3,259	568	165	895	204	13,890	76	253	90	16,082	444	17,151	28,011	10,266	3,750	649
Kitsap	636	274	110	425	59	758	28	13	11	17	73	4,531	4,335	15	916	458
Kittitas	148	13	8	17	14	87	......	28	......	111	18	325	179	12	211	218
Klickitat	179	9	18	15	6	34	3	50	......	30	21	898	127	100	176	259
Lewis	796	347	31	315	9	905	27	107	29	346	36	3,828	5,023	453	693	440
Lincoln	59	6	40	14	14	48	......	4	......	1	16	400	......	......	12	5
Mason	8	......	......	1	......	2	......	1	......	......	......	100	700	......	17	1,014
Okanogan	1,012	105	37	18	20	12	......	2	3	10	......	1,151	6,096	......	10	......
Pacific	348	118	1	133	3	82	2	1,029	......	188	35	2,125	2,092	......	352	708
Pend Oreille	31	2	2	3	1	7	......	......	......	5	......	475	......	......	6	......
Pierce	1,409	654	110	1,138	1,022	23,716	68	294	24	51	551	12,309	26,176	......	4,119	685
San Juan	4	200	......	2	......	6	......	1	2	12	1,000	3,500	1,526	......	30	100
Skagit	947	314	58	475	29	1,067	23	74	4	1,610	134	8,236	14,065	274	2,263	122
Skamania	529	549	8	10	......	49	......	40	15	15	......	612	49	......	15	631
Snohomish	1,871	807	185	1,279	90	1,422	53	209	106	641	1,077	7,168	5,718	1,449	1,735	1,649
Spokane	1,964	1,111	130	354	18	868	84	604	23	1,101	20	24,850	153	......	10,840	2,200
Stevens	110	10	41	87	9	20	3	15	2	1	......	1,850	66	......	24	......
Thurston	653	207	27	347	6	1,352	28	184	22	149	32	2,061	809	3,337	398	203
Wahkiakum	......	......	......	6	......	......	......	......	1	162	4	1,686	12	124	48	194
Walla Walla	520	100	125	315	26	128	15	183	45	47	46	6,100	679	680	626	206
Whatcom	2,219	830	62	928	14	1,989	21	82	10	116	19	9,882	2,476	465	1,180	363
Whitman	2,368	648	598	360	683	975	27	186	23	74	......	4,965	4,357	......	2,548	232
Yakima	28,215	15,090	961	20,679	2,477	1,787	23	734	1,208	1,348	1,912	34,805	26,160	265	7,050	2,052
Total	85,808	36,651	6,167	33,117	6,022	51,687	471	5,623	1,819	32,208	6,528	180,430	204,880	18,368	42,272	16,744

NURSERY STOCK SHIPMENTS 1921-1922.

COUNTIES	Apples	Pears	P'ches	Plums Prunes	Apricots	Cherries	Quinces	Grapes	Nuts	Raspberries	Blackberries	Strawberries	Misc. Berries	Garden Roots	Ornamental Vines, Trees, Shrubs	Perennials and Misc.
Adams	176	30	6	13	17	77	17	388	....	52	12	....	20	8	308	344
Asotin	135	123	715	99	199	382	8	703	21	336	330	....	841	146	335	26
Benton	25,875	46,416	6,996	24,811	4,622	13,791	21	238,102	17	492	22	58,962	1,727	68,549	14,455	1,877
Chelan	27,204	33,716	7,384	8,492	18,340	39,172	213	2,605	39	4,345	331	2,750	2,778	106	7,886	150
Clallam	149	66	7	121	12	128	4	49	1	110	24	....	81	2	175	56
Clarke	846	93	68	21,976	9	78	17	114	48	710	689	4,262	1,347	757	531	225
Columbia	2,512	253	423	151	34	59	1	143	4	50	50	1,303	221	....	235	1
Cowlitz	156	50	18	46	8	116	1	43	11	8	18	15,862	56	1,225	168	289
Douglas	363	7	1,217	8	5,171	16	74	20	....	....	....	100	83	....	24	14
Ferry	235	49	54	72	30	75	1	19	4	49	....	1,500	425	14	51	34
Foreign	810	3	3,035	5,582	5,517	129	....	4,232	235	107	4	51	3,326	....	410	27
Franklin	383	30	57	31	176	166	....	970	6	200	18	500	578	440	304	10
Garfield	119	14	43	46	22	70	....	39	....	160	64	300	99	55	88	41
Grant	368	27	1,139	82	1,622	95	48	514	13	1	2	25	451	12	387	112
Grays Harbor	581	150	10	226	....	475	9	49	....	598	323	4,816	3,161	394	1,434	1,030
Island	338	122	33	120	23	221	8	55	12	6	9	100	292	100	108	26
Jefferson	195	21	11	54	1	66	....	10	1	19	5	200	81	112	126	53
King	3,675	4,502	582	1,650	313	5,735	145	1,176	290	19	156	612	7,624	635	10,904	10,398
Kitsap	640	229	45	267	40	133	18	15	11	57	10	125	161	17	194	516
Kittitas	1,838	282	104	325	76	173	5	122	8	6	30	5,050	2,636	341	1,237	195
Klickitat	2,582	1,376	74	537	64	197	4	366	20	158	91	5,500	198	485	475	423
Lewis	1,410	446	332	561	11	623	41	242	62	573	297	1,819	2,177	802	2,548	697
Lincoln	483	42	237	86	125	158	2	85	....	140	31	....	558	106	1,093	146
Mason	100	19	6	18	....	36	....	12	3	48	4	512	164	858	23	43
Okanogan	48,700	4,283	11,360	5,526	16,418	495	236	4,208	101	14,149	246	3,350	2,136	295	874	90
Pacific	184	13	9	48	1	17	1	2	....	36	16	11,513	487	3,144	180	143
Pend Oreille	567	74	17	160	14	137	5	45	....	....	....	1,000	789	15	148	14
Pierce	2,656	621	190	1,237	38	2,949	124	314	54	1,260	28	2,656	1,450	1,958	3,434	2,645
San Juan	31	5	10	7	....	109	2	23	1	1	3	....	12	171	7	7
Skagit	809	220	154	326	13	810	15	144	8	121	104	112	823	120	1,061	78
Skamania	271	481	588	20	....	130	2	23	2	1,000	3	....	913	413	252	....
Snohomish	2,215	1,501	306	1,200	91	2,449	57	1,076	51	275	49	8,650	3,172	780	2,084	800
Spokane	8,974	2,593	2,575	3,019	1,073	1,497	61	6,552	60	3,777	1,019	18,912	11,675	1,325	17,705	5,228
Stevens	3,561	433	1,234	779	399	1,067	13	734	11	195	14	650	3,122	221	898	113
Thurston	799	200	130	314	7	384	10	48	11	23	35	1,962	1,687	620	465	687
Wahkiakum	10	....	....	6	88	5	....	....	....	....	3	1,550	18	179	45	44
Walla Walla	3,097	122	624	3,037	179	809	16	7,227	33	106	14	14,200	3,702	11,022	1,155	1,058
Whatcom	796	608	59	330	15	842	15	61	22	32	1,022	4,953	1,329	87	675	427
Whitman	1,079	457	423	688	2,049	502	3	918	37	52	8	8,700	3,879	318	2,857	522
Yakima	48,190	78,357	16,836	21,652	7,669	106,643	273	84,513	1,266	11,702	5,908	7,447	36,261	62,836	33,233	2,208
Total	187,112	172,984	59,110	103,713	64,486	181,016	1,465	355,961	2,463	40,962	10,992	185,004	100,400	153,663	108,072	30,306

NOTE: These figures represent for most part the notices received from nurseries of shipments in the State. Some licensed nurseries forgot to send these notices in regularly, and outside nurseries sent none. The total nursery stock shipments are, therefore, approximately double these figures for trees, and the berry plant figures are several times these numbers. Practically all of the nursery stock shipped was inspected by state inspectors at one place or another.

BY-PRODUCTS PLANTS AND CANNERIES.

October 14, 1922.

Name of Company and Location of Plant.	Kind of Plant.
Arlington Cannery, Arlington	Cannery
Baker Cannery Co., Lynden	Cannery
Bellingham Fruit Co., Bellingham	Cannery
Bergoust-Davis & Co., Seattle	Cannery
Blalock Evaporator Co., Walla Walla Co.	Evaporator
Bishop Bros., Seattle	Cider Mill
Buena Evaporating Co., Buena	Evaporator
Burlington Cannery, Burlington	Cannery
California Packing Co., Yakima	Evaporator
Church Manufacturing Co., Kennewick	Cider Mill
Clark-Chelan Co., Chelan	Evaporator
Cloud-Thomas Co., Selah	Evaporator
Coast Conserve Co., Seattle	Cider Mill
Coast Conserve Co., Seattle	Cannery
Columbia Fruit Products Co., Hanford	Evaporator
Cusick's Cider Works., Spokane	Cider Mill
Deem Grear Canning Co., Mossy Rock	Cannery
Dustin Cannery, Asotin County	Cannery
Everett Fruit Products Co., Everett	Cannery
Everson Cannery, Everson	Cannery
Ferguson Cannery, Snohomish	Cannery
Ferndale Cannery Co., Ferndale	Cannery
Fisher Canning Co., Bellevue	Cannery
Hill's Cannery, Asotin County	Cannery
Hood River Cider Store, Seattle	Cider Mill
Huting, E. T., Silver Creek	Evaporator
Inland Cider Works, Spokane	Cider Mill
Inland Products Co., Spokane	Cider Mill
Jones Bros., Yakima	Cider Mill
Keller-Lorenz Co., Spokane	Cider and Vinegar
Lewis County Canning Co., Chehalis	Cannery
Libby, McNeil & Libby, Seattle	Cannery
Libby, McNeil & Libby, Yakima	Cannery
Lummi Bay Packing Co., Bellingham	Cannery
Lust & Walters Processing Co., Yakima	Cannery
Luther Dehydrator, Walla Walla Co.	Evaporator
Martin, F. M., Grandview	Evaporator
Martin, F. M., Zillah	Evaporator
Montesano Packing Co., Montesano	Cannery
Morehouse, C. S., Seattle	Bakery
National Fruit Canning Co., Seattle	Cannery
Northwest Evaporating Co., Cashmere	Evaporator
Northern Pickle Co., Tacoma	Cannery
Olympia Canning Co., Olympia	Cannery
Olympia Canning Co., Port Townsend	Cannery
Oregon Packing Co., Asotin County	Cannery
Oregon Packing Co., Vancouver	Cannery
Pacific Cider & Vinegar Works, Seattle	Cider and Vinegar
Pacific Coast Syrup Co., Seattle	Cannery
Pe Ell Canning Co., Pe Ell	Cannery
Petrie's Cannery, Asotin County	Cannery
Port Angeles Cannery, Port Angeles	Cannery
Porter's Products, Mrs., Seattle	Cider and Cannery
Pride & Co., W. H., Bellingham	Cannery
Puyallup & Sumner Canning Co., Sumner	Cannery
Puyallup & Sumner Fruit Growers Canning Co., Puyallup	Cannery
Randle Canning Co., Randle	Cannery

Name of Company and Location of Plant.	Kind of Plant.
Rupert Co., A., No. Puyallup	Cannery
Salter's Cider Works, Spokane	Cider Mill
Schneider & Co., F., Seattle	Cider Mill
Seattle & Puget Sound Packing Company, Seattle	Cannery
Sedro Woolley Cannery, Sedro Woolley	Cannery
Selter's Cider Works, Spokane	Cider and Vinegar
Selah Fruit Growers Inc., Selah	Evaporator
Shepherd Fruit Products Co., Wenatchee	Evaporator
South Bend Canning Co., South Bend	Cannery
Spokane Brewing & Malting Co., Spokane	Cider Mill
Spokane Cider Works, Spokane	Cider Mill
State Penitentiary, Walla Walla Co.	Evaporator
Sunnybrook Cannery, Snohomish	Cannery
Washington Berry Growers, Sumner	Cannery
Washington Dehydrated Food Co., Grandview	Cannery
Washington Dehydrated Food Co., Wenatchee	Cannery
Washington Dehydrated Food Co., Yakima	Evaporator
Webster & Heyl, Seattle	Cider Mill
Yakima Food Products Co., Yakima	Cider and Vinegar
Younglove & Co., Sunnyside	Cannery
Younglove & Co., Tacoma	Cannery
Names Company, Paul, Tacoma	Cider and Vinegar
Baker Company, H. A., Sumner	Cannery

List of Nurserymen Licensed to Do Business in the State of Washington, November 1, 1922.

ADAMS COUNTY.

Kittel, J. C.	Ritzville

BENTON COUNTY.

Freeman, Fred P., (Home Nursery Co.)	Richland
Gardner, J. R., (Gardner's Nursery Co.)	Kennewick
Nickerson, P. E., (Prosser Nurseries)	Prosser
Wray, Horace E., (Kennewick Nursery Co.)	Kennewick

CHELAN COUNTY.

Chelan Greenhouse & Nursery Company	Chelan
Columbia & Okanogan Nursery Company, Inc.	Wenatchee
Milot-Mills Company	Wenatchee
Larner, George Washington	Wenatchee

CLARKE COUNTY.

Cooper, W. I., Route No. 1	Camas
Holton, I. S.	Vancouver
Langlois, E. C., 3504 E. 7th Street	Vancouver
Luepke, Frank, 13th and Washington Streets	Vancouver
Riegle, Emanuel, Route No. 6	Vancouver
Payne, Frank E.	Camas

COWLITZ COUNTY.

Kean, J. T., (Kelso Nursery Co.) Box 31	Kelso

GRAYS HARBOR COUNTY.

Balla, John M.	Aberdeen

KING COUNTY.

Adams, J. W., (Richmond Nurseries)	**Richmond Beach**
Albertson, E., 1704 North 80th Street	**Seattle**
Baer, Charles H., 6633 Flora Ave.	**Seattle**
Bauer, Christian, 530 28th Ave. No.	**Seattle**
Beall Greenhouse Company, Inc.	**Vashon**
Betz, E. F., P. O. Box 318	**Renton**
Bladine, E., (Lakeview Rose Gardens) 1601 15th Ave. No.	**Seattle**
Bonnell, J. J., 2601 E. Galer Street	**Seattle**
J. A. Boyce Seed Company, 89 Pike Street	**Seattle**
Carver, E. G., (Seattle Nursery Co.) 4520 Sunnyside Ave.	**Seattle**
Carver, Gleason A., 2324 No. 50th Street	**Seattle**
Dupea, Thomas, 3829 Renton Ave.	**Seattle**
Dutton, H. O., 3822 Ashworth Ave.	**Seattle**
Fabi, E. A., 3711 12th Ave. N. E.	**Seattle**
Fujino, J., (Pacific Floral Co.)	**Seattle**
M. Furuya Company, 216 Second Ave. So.	**Seattle**
Hamada, Tokijiro, 452 27th Ave. No.	**Seattle**
Heege, Otto, (South Park Nursery) Route 3, Box 17	**Seattle**
Hollywood Gardens, Inc., 1534 Second Ave.	**Seattle**
Iseri, Ruzo, P. O. Box 36	**Bryn Mawr**
Harmeling, Stephen J., and Edward, (Island Nursery Co.)	**Vashon**
Iwasaki, T., P. O. Box 38	**Bryn Mawr**
Kanada, Shinsaku, 839 Elmgrove St. So. Park	**Seattle**
Kanno, Shinziro, R. F. D. No. 1, Box 9	**Seattle**
Kempf, Peter, 3411 Belvedere Ave.	**Seattle**
Kumagai, K., Route No. 6, Box 220	**Seattle**
Kumasaka, S., R. F. D. No. 6, Box 270	**Seattle**
Kusumi, Takesaburo, R. F. D., Box 149	**Bellevue**
Lange, Paul E., 6813 Weedin Place	**Seattle**
Latona Floral Company, 347 E. 56th Street	**Seattle**
Lester & Monahan, 8536 Greenwood Ave.	**Seattle**
Malmo & Company, 1900 Sixth Ave.	**Seattle**
Matsuda, Tetsujiro, 6702 14th Ave. N. W.	**Seattle**
McClimans, Lillian M., 5401 Ravenna Ave.	**Seattle**
McCoy, C. E., 4839 Brandon St.	**Seattle**
Miyamoto, Genzo, Route No. 2, Box 258 A	**Auburn**
Mochizuki, Bunkichi, 1606 Pike Place	**Seattle**
Mochizuki, S. Kazuyashi, R. F. D. No. 6, Box 305	**Seattle**
Mochizuki, Tomitoro, 6702 14th Ave.	**Seattle**
Morgan, Henry C., 1418 Third Ave.	**Seattle**
Morita, M., R. F. D. No. 5, Box 401	**Seattle**
Morris, Thos., 1910 9th Ave. W.	**Seattle**
Nishitani, H., (Oriental Gardens Co.) R. 1, Box 364	**Seattle**
Noji, Zenya, (Columbia Greenhouse Co.) 3206 Juneau St.	**Seattle**
Nomura, Shiyokich, 5115 35th Ave. So.	**Seattle**
O'Brien, Philip D., (Pioneer Floral Co.) 3118 Yesler Way	**Seattle**
Paine Brothers, R. F. D. No. 2, Box 797	**Seattle**
Prentice, Clarence, (Prentice Nurseries) R. No. 2	**Kent**
Reid, R. T.	**Bellevue**
Rosaia, P. F., & Geo. P., (Thomas Floral Co.) 1003 3rd Av.	**Seattle**
Saito, Kumakichi, R. F. D., Box 63	**Bellevue**
Sano, Fukuo, 1516 40th Ave. No.	**Seattle**
Sheffield, Mrs. Geo., R. F. D. No. 1	**Burton**
Shimizu, Kamon, P. O. Box 55	**Zenith**
Soderquist, E., 2029 10th Ave. No.	**Seattle**
Stewart, John G., (Christopher Nurseries) R. 2, Box 215A.	**Auburn**
Suzuki, Sosaku, P. O. Box 1645	**Renton**
Suzuki, Y., (Auburn Greenhouses)	**Auburn**
Uchida, Tadatomo, 602 North 87th St.	**Seattle**
Vashon Garden Company, Inc.	**Vashon**

Waight, Charles H., 6537 Greenwood Ave.	Seattle
Wessman & Strander	Renton Junction
Whitney, F. A., 3846 34th Ave. W.	Seattle
Wylie, Thomas, 5138 Holly Street	Seattle
Yabuki, Kameji, Box 70	Houghton
Yabuki, Terumatsu, R. F. D., Box No. 75	Bellevue
Yokes, Rudolph T., 5422 California Ave.	Seattle
Anderson, H. P. (University Floral Shop), 4309 14th Ave. N. E.	Seattle
Greene, J. A., and Frankie L. (Greene's Nursery), 3104 W. McGraw Ave.	Seattle
Sandved, Peder, 1803 39th St. N.	Seattle
Sherbrooke, W. E.	Kirkland
Showers, C. W., and Runge, J. E., (Floristan Dahlia Gardens) Route No. 2	Kent
Stuber & Richardson	Bryn Mawr
Leissler, Fred (Apple Blossom Place Nursery), Route 6, Box 429	Seattle
Regalia, Joseph, 450 N. 34th Street	Seattle
Sandahl, Eugene N., (The Burdett Co.) 1st & Denny Way.	Seattle
Flagg, A. B., (Evergreen Nursery)	Medina

KITSAP COUNTY.

Horikoshi, Hatsuziro, R. F. D., Box 86	Port Blakeley
Katayama, Isasaburo, R. F. D., Box 56	Port Blakeley
Moore, Benjamin F., and Beulah I.,	Poulsbo
Nakagawa, Toyaichi, R. F. D. No. 1, Box 68	Port Blakeley
Nakamura, H. M.	Poulsbo
Okamoto, Shikatado, P. O. Box 146	Winslow
Olson, E. L.	Port Blakeley
Seko, Zenmatsu, R. F. D. Box 77	Port Blakeley
Schricker, Frank C., (Olympic Flower Shop) 5th and Pacific	Bremerton
Takayoshi, Seinosuke, P. O. Box 37	Port Blakeley
Urban, E. H., 212 Second Street	Bremerton

KITTITAS COUNTY.

Moffet, Frederick I., R. F. D. No. 1	Ellensburg

KLICKITAT COUNTY.

Mount Adams Nurseries	Husum
Wray, E. P., (White Salmon Nursery)	White Salmon

LEWIS COUNTY.

Leake, W. A.	Centralia
Wibra, Geo. I., 1530 Market St.	Chehalis

MASON COUNTY.

Somers, Frank S., and Charles, Jr., (Island Belle Nursery)	Detroit
Eckert Fruit Company	Detroit

OKANOKAN COUNTY.

Mohler, William, (Okanogan Valley Nurseries)	Tonasket
Johnson & Thayer, Box 94	Okanogan

PEND OREILLE COUNTY.

Kiser, E. A.	Tiger

SAMPLES SUBMITTED TO STATE CHEMISTS—Continued.

SUMMARY

PRODUCTS	Legal	Illegal	Doubtful	Totals
Foods	471	486	17	974
Feeds	160	15	9	184
Fertilizers	54	3	6	63
Drugs	14	....	....	14
Samples submitted—Total	....	....	....	1,235

FOOD AND DRUG CONDEMNATIONS.

SUMMARY

Foods—			
Canned goods	cans	1,659,351	
Bottled goods	bottles	375	
Bulk goods	pounds	744,564	
Package goods	packages	241	
Miscellaneous	dozen	34⅝	
			2,404,565⅝
Utensils	pieces	253	253
Drugs—			
Drugs and proprietary medicines	packages	1,614	1,614
Total condemnations	parcels		2,406,432⅝
Feeds—			
Oil feeds reconditioned	tons	910	
Non-registered and misbranded feeds shipped out of state	sacks	1,038	
Misbranded feeds required to be labeled to conform to stock feed law	sacks	1,278	
			3,226

SUMMARY CONCENTRATED COMMERCIAL FEEDING STUFFS REGISTRATIONS.

FEEDS REGISTERED

Calf meals	11
Dairy feeds	48
Dog feeds	2
Hog feeds	28
Horse feeds	1
Lamb feeds	3
Low grade flour (Red Dog)	3
Milk feeds	26
Mixed feeds (various)	65
Molasses feeds	21
Poultry feeds	256
Bran, shorts, middlings	84
Miscellaneous	10
Total number of brands	558

FIRMS REGISTERED

Albers Bros. Milling Co	Seattle, Wash.
Animal Food Company	Oakland, Cal.
Armour Fertilizer Works	Chicago, Ill.
Armour & Co	Spokane, Wash.
Associated Grange Warehouse	Seattle, Wash.
Atlas Cereal Co	Kansas City, Mo.
Anacortes Ice Co	Anacortes, Wash.
Auburn Milling & Grain Co	Auburn, Wash.
Babcock, C. A. Co	Portland, Ore.
Bayview Milling Co	Seattle, Wash.

Blair, R. J.	Camas, Wash.
Blatchford Calf Meal Co	Waukegan, Ill.
Boyd-Conlee Co	Spokane, Wash.
Brewer & Co	Olympia, Wash.
Buckley Feed Mills (France Bros.)	Buckley, Wash.
California Cotton Oil Co	Los Angeles, Cal.
Cardle Bros	Everett, Wash.
Carstens Packing Co	Tacoma, Wash.
Centennial Mill Co	Spokane, Wash.
Central Hay & Grain Co	Spokane, Wash.
City Grain & Seed Co.	Mount Vernon, Wash.
Coast Trading Co	Tacoma, Wash.
Collins Flour Mills	Pendleton, Ore.
Colton Flour Mills	Colton, Wash.
Columbia River Milling Co	Wilbur, Wash.
Conkey, G. E. Co	Cleveland, Ohio
Crescent Mills	Bellingham, Wash.
Crown Mills	Portland, Ore.
Coffin Packing & Provision Co	Denver, Colo.
Diamond Flour Mills Co	The Dalles, Ore.
Dowdle & Caldwell	Spokane, Wash.
Ellensburg Milling Co	Ellensburg, Wash.
Elston, J. W. & Sons (Elston Whse.)	Chehalis, Wash.
Eureka Flour Mills	Walla Walla, Wash.
Falls City Mill & Feed Co	Spokane, Wash.
Farley, F. J	Bellingham, Wash.
Ferndale Feed & Grocery Co	Ferndale, Wash.
Fisher Flouring Mills Co	Seattle, Wash.
Fleischmann Co., The	Sumner, Wash.
Ford Grain Co	Bellingham, Wash.
Galbraith & Co	Seattle, Wash.
Garden City Feed Mill	Walla Walla, Wash.
Globe Grain & Milling Co	Seattle, Wash.
Globe Oil Mills	Los Angeles, Cal.
Golden Rod Milling Co	Portland, Ore.
Gould & Co	Burlington, Wash.
Grange Warehouse Co	Puyallup, Wash.
Hodges, Z. & Son	Sequim, Wash.
Humane Stock Remedies Co	Dishman, Wash.
Inland Seed Co., The	Spokane, Wash.
Jahn, W. F. & Co	Seattle, Wash.
Judith Milling Co	Hobson, Mont.
Kalispell Flour Mill Co	Kalispell, Mont.
Kent Feed Company	Kent, Wash.
Kenworthy Grain & Milling Co	South Tacoma, Wash.
Kerr Gifford & Co., Inc	Portland, Ore.
Keyes, W. A	Burbank, Wash.
Lakin Milling Co	Spokane, Wash.
Leckenby, Harry N., Inc	Seattle, Wash.
Lehmann Bros., (City Mills)	Seattle, Wash.
Lilly, The Chas. H. Co	Seattle, Wash.
Mabton Milling Co	Mabton, Wash.
Martin, F. M. Grain & Milling Co	Cheney, Wash.
Miller Flour Mills	Yakima, Wash.
Montana Flour Mills	Lewistown, Mont.
Morrell, John & Co	Sioux Falls, S. D.
Mutual Rendering Co., Inc	Philadelphia, Pa.
Midlakes Feed & Milling Co	Bellevue, Wash.
Nebraska Corn Mills	Lincoln, Neb.
Neil Brothers Grain Company	Spokane, Wash.
Northern Flour Mills Co	Portland, Ore.
Novelty Mill Co	Seattle, Wash.
Pacific American Fisheries	South Bellingham, Wash.

Palmolive Company, The (Branch)	Portland, Ore.
Pasco Flour Mills Co	Pasco, Wash.
Peacock Mill Co	Freewater, Ore.
Peterson, P. A.	Cove, Wash.
Peterson Bros. Grain & Fuel Co	Tacoma, Wash.
Pillsbury Flour Mills Company	Minneapolis, Minn.
Plymouth Milling Co	Le Mars, Iowa
Pomeroy Flour Mills	Pomeroy, Wash.
Portland Flouring Mills Co., The	Portland, Ore.
Portland Feed Mills Co	Portland, Ore.
Poultry Feed Association	Bellingham, Wash.
Preston Shaffer Milling Co	Waitsburg, Wash.
Prosser Flour Mills	Prosser, Wash.
Puyallup Feed & Supply Co	Puyallup, Wash.
Randall & McLoughlin	Seattle, Wash.
Rauh, E. & Sons (Animal Food Co.)	Indianapolis, Ind.
Ritzville Flouring Mills	Ritzville, Wash.
Rudy-Patrick Seed Co	Kansas City, Mo.
Russell Miller Milling Co	Minneapolis, Minn.
Royal Milling Co	Great Falls, Mont.
Ryde & Co	Chicago, Ill.
Seattle Flour Mills	Seattle, Wash.
Sears, Roebuck & Co	Seattle, Wash.
Shaffer & Colby	Kent, Wash.
Skagit Commission Co	Sedro Wooley, Wash.
Smith Feed Co	Auburn, Wash.
South Park Grocery	Everett, Wash.
Sperry Flour Company	Tacoma, Wash.
Spokane Flour Mills	Spokane, Wash.
Sprague Roller Mills	Sprague, Wash.
Stanwood Grain Co	East Stanwood, Wash.
Stretch, R. J. & Co	Monroe, Wash.
Stevens, John B. & Co	Tacoma, Wash.
Sumber Grain & Milling Co	Sumner, Wash.
Swift & Co	Portland, Ore.
Superior Milling Co	Winona, Wash.
Tacoma Grain Co	Tacoma, Wash.
Tjossem, R. P. & Son	Ellensburg, Wash.
Tofley, M. O	Spokane, Wash.
Touchet Milling Co	Huntsville, Wash.
Tuttle Feed Co	Vancouver, Wash.
Vancouver Flour Mills Co	Vancouver, Wash.
Vollmer Clearwater Co., Ltd	Seattle, Wash.
Walla Walla Farmers' Agency	Walla Walla, Wash.
Walla Walla Mill Co	Walla Walla, Wash.
Wasco Warehouse Milling Co	The Dalles, Ore.
Washburn & Wilson Seed Co	Moscow, Idaho
Washington Co-operative Egg & Poultry Association	Seattle, Wash.
Washington Grain & Milling Co	Reardan, Wash.
Weiser Milling & Elevator Co	Weiser, Idaho
Wenatchee Milling Co	Wenatchee, Wash.
Wenatchee Produce Co	Wenatchee, Wash.
Western Produce Co	Everett, Wash.
White Feed Co	Everett, Wash.
Yakima Milling Co	Yakima, Wash.

Number of firms registered to June 30, 1922 128

Registered Since Close of Fifth Biennium.

Anderson, Chas. E.	Republic, Wash.
Banks Bros., Inc.	Everett, Wash.
Christensen & Son	Vancouver, Wash.
Collis Products Co	Clinton, Iowa
Eureka Milling Co	Seattle, Wash.
Klickitat Roller Mills	Goldendale, Wash.
Preston Grain & Milling Co	Toppenish, Wash.
Plains Montana Mills	Plains, Mont.
Riverside Milling Co	Everett, Wash.
Richardton Milling Co	Richardton, Mont.
Robinson Fisheries	Anacortes, Wash.
Vollmer Clearwater Co	Lewiston, Idaho
Walla Walla Meat & Cold Storage Co.	Walla Walla, Wash.
	13
Total number of registered firms	141

SUMMARY OF FERTILIZER REGISTRATIONS AND FEES PAID.

FIRMS		1921	1922
American Lignaite Co	Seattle, Wash	$30 00	
American Nitrogen Products Co	Seattle, Wash	6 00	
American Pacific Whaling Co	Seattle, Wash		$18 00
Anaconda Copper Mining Co	Anaconda, Mont		24 00
Andrews-Escott Co	Vancouver, B. C.		18 00
Armour & Co	Spokane, Wash	48 00	80 00
Baker & Coe	White Salmon, Wash.		18 00
The Barrett Co	New York City	6 00	6 00
Barton & Co	Seattle, Wash	24 00	30 00
S. Blachley & Co	Starbuck, Wash	18 00	18 00
Carstens Packing Co	Spokane, Wash	18 00	
Carstens Packing Co	Tacoma, Wash	36 00	
Columbia & Okanogan Nursery Co	Wenatchee, Wash	18 00	
Earp-Thomas Co	New York City	18 00	18 00
James Henry Co	Seattle, Wash	18 00	18 00
W. H. Ingle	Tacoma, Wash		18 00
I. F. Laucks	Seattle, Wash		18 00
Lester-Monohan	Seattle, Wash		18 00
Lignaite Fertilizer Co	Seattle, Wash		18 00
Chas. H. Lilly Co	Seattle, Wash	90 00	126 00
Marine Products Co	Tacoma, Wash	102 00	36 00
Mountain Copper Co	San Francisco, Cal.	6 00	6 00
Nitrate Agencies Co	Seattle, Wash	6 00	6 00
North Pacific Sea Products Co	Seattle, Wash	18 00	30 00
Pacific Guano & Fertilizer Co	San Francisco, Cal.	18 00	18 00
Portland Seed Co	Portland, Ore	72 00	78 00
Poultry Fertilizer Co	Seattle, Wash		18 00
Puyallup & Sumner Fruit Growers' Association	Puyallup, Wash		18 00
Randall-McLoughlin	Seattle, Wash	18 00	
Robinson Fisheries Co	Anacortes, Wash	12 00	
Sea Products Co	Seattle, Wash	24 00	24 00
Seattle Seed Co	Seattle, Wash	18 00	
Spokane Fertilizer Co	Spokane, Wash	18 00	108 00
Standard Chemical Co	Tacoma, Wash	18 00	
Stock & Plant Food Co	Tacoma, Wash		138 00
Swift & Co	North Portland, Ore.	222 00	288 00
U. S. Potash Nitrate Co	Seattle, Wash		18 00
Walla Walla Meat & Cold Storage Co	Walla Walla, Wash.	18 00	42 00
Walla Walla Produce Co	Walla Walla, Wash.	18 00	
Western Fertilizer Co	San Francisco, Cal.	18 00	18 00
Woodruff-Boyce Seed Co. (J. A. Boyce Seed Co.)	Seattle, Wash	18 00	18 00
Total analytical fees paid		$954 00	$1,320 00

Number of firms registered in 1921	29	
Number of firms registered in 1922	31	
		60
Number of brands registered in 1921	74	
Number of brands registered in 1922	96	
		170
Number of ingredients contained in brands registered in 1921—159@$6 00 ea.	$954 00	
Number of ingredients contained in brands registered in 1922—220@$6 00 ea.	1,320 00	
		$2,274 00

REGISTERED FERTILIZERS.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent)	1921	1922
THE AMERICAN LIGNAITE CO., **Tacoma, Wash.**			
Lignaite Solution	Nitrogen.		
	Phosphoric Acid	6.30	....
	Potash	6.66	....
Prof. Scammell's "Lignaite Fertilizer"	Nitrogen in ammonia	1.07	....
	Phosphoric Acid	.20	....
	Potash	.20	....
AMERICAN NITROGEN PRODUCTS CO., **Seattle, Wash.**			
Soda Nitrogen	Nitrogen	15.00	....
AMERICAN PACIFIC WHALING CO., **Bay City, Wash.**			
Whale Bone Meal	Nitrogen		3.00
	Phosphoric Acid		20.00
Whale Meat and Blood	Nitrogen		12.00
ANACONDA COPPER MINING CO., **Anaconda, Mont.**			
Anaconda 8-13-6	Nitrogen total		8.00
	Phosphoric Acid, soluble		10.34
	Phosphoric Acid, reverted		2.66
	Phosphoric Acid, insoluble		1.03
	Phosphoric Acid total		14.03
	Potash, soluble		6.00
	Potash, chloride		4.08
Anaconda Treble Phosphate	Phosphoric Acid, soluble		38.00
	Phosphoric Acid, reverted		6-7.00
	Phosphoric Acid, insoluble		3-4.00
	Phosphoric Acid total		48.00
THE ANDREWS-ESCOTT CO., **Vancouver, B. C.**			
"Fertabs"	Nitrogen		13.57
	Phosphoric Acid, soluble		17.86
	Phosphoric Acid, citric sol.		18.74
	Phosphoric Acid total		18.74
	Potash, soluble		11.00
ARMOUR & CO., **Spokane, Wash.**			
Ground Sheep Manure	Nitrogen total	1.97	....
	Nitrogen in ammonia	2.39	....
	Phosphoric Acid, insoluble	1.46	....
	Potash, soluble	2.83	....
Bone Meal	Nitrogen total	3.95	4.39
	Nitrogen in ammonia	4.81	....
	Phosphoric Acid total	22.64	23.99
Ground Blood	Nitrogen total	13.62	13.14
	Nitrogen in ammonia	16.54	....
Ground Tankage	Nitrogen total	6.84	5.58
	Nitrogen in ammonia	8.30	....
	Phosphoric Acid	7.42	7.71
BAKER & CO., **White Salmon, Wash.**			
Eden Brand Pulverized Sheep Manure	Nitrogen total		2.37
	Nitrogen in ammonia		2.98
	Phosphoric Acid		1.52
	Potash		3.06

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent)	1921	1922
THE BARRETT CO., Sales Agents, New York City.			
Arcadian Sulphate of Ammonia	Nitrogen	20.75	20.75
BARTON & CO., Seattle, Wash.			
Bone Meal	Nitrogen	4.08	....
	Phosphoric Acid	24.97	....
Tankage	Nitrogen	8.83	8.50
	Phosphoric Acid	8.22	6.00
Dried Blood	Nitrogen	....	12.00
Granulated Bone	Nitrogen	....	3.50
	Phosphoric Acid	....	20.00
S. BLACHLEY & CO., Starbuck, Wash.			
Twin Buck Brand Sheep Guano	Nitrogen	2.00	2.00
	Phosphoric Acid	1.25	1.25
	Potash	1.84	1.84
CARSTENS PACKING CO., Spokane, Wash.			
Dried Blood	Nitrogen in ammonia	14.43	....
Tankage	Nitrogen in ammonia	7.95	....
	Phosphoric Acid, bone phosphate	22.07	....
CARSTENS PACKING CO., Tacoma, Wash.			
Bone Meal	Nitrogen in ammonia	3-4.00	....
	Phosphoric Acid total	20-23.00	....
Dried Blood	Nitrogen in ammonia	12-14.00	....
Sheep Guano	Nitrogen in ammonia	2–3.00	....
Tankage	Nitrogen in ammonia	6½–7½	....
	Phosphoric Acid	9–10.00	....
COLUMBIA & OKANOGAN NURSERY CO., Wenatchee, Wash.			
Sheep Manure	Nitrogen total	2.00	....
	Phosphoric Acid	1.00	....
	Potash, soluble	2.00	....
EARP-THOMAS CULTURES CORP., New York City, N. Y.			
Stim-U-Plant Tablets	Nitrogen total	11.00	11.00
	Phosphoric Acid, soluble	10.52	10.52
	Phosphoric Acid, reverted	1.19	1.19
	Phosphoric Acid, insoluble	.36	.36
	Phosphoric Acid total	12.00	12.00
	Potash	15.00	15.00
	Potash, chlorine	1.60	1.60
JAMES HENRY, Seattle, Wash.			
Dry Blood (1921)	Nitrogen	15.00	....
Unground Blood (1922)	Nitrogen	....	16.00
Tankage—unground	Nitrogen as ammonia	6.08	6.05
	Phosphoric Acid, bone phosphate	23.03	30.00

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent)	1921	1922
W. H. INGLE, **Tacoma, Wash.**			
Odorless Fertilizer	Nitrogen		.11
	Phosphoric Acid, soluble		7.41
	Phosphoric Acid, reverted		1.25
	Phosphoric Acid total		8.66
	Potash		9.76
I. F. LAUCKS, **Seattle, Wash.**			
Plant "Manna"	Nitrogen		6.00
	Phosphoric Acid, soluble		22.00
	Phosphoric Acid, reverted		1.00
	Phosphoric Acid, insoluble		1.00
	Phosphoric Acid total		24.00
	Potash		7.00
	Potash, chlorine		.50
LESTER-MONOHAN, **Seattle, Wash.**			
Vita Fertilizer	Nitrogen		3.00
	Phosphoric Acid		2.00
	Potash		3.50
LIGNAITE FERTILIZER CO., **Seattle, Wash.**			
Lignaite Fertilizer	Nitrogen in nitrates		1.00
XX Brand	Nitrogen in ammonia		1.50
	Phosphoric Acid, soluble		1.00
	Potash		2.00
THE CHAS. H. LILLY CO., **Seattle, Wash.**			
Blood and Bone	Nitrogen total	3.00	3.00
	Phosphoric Acid	10.00	10.00
Bone Meal	Nitrogen	3.00	3.00
	Phosphoric Acid, soluble	.32	.32
	Phosphoric Acid, reverted	16.40	16.40
	Phosphoric Acid, insoluble	2.90	2.90
	Phosphoric Acid total	19.62	19.62
Morcrop	Nitrogen	2.00	2.00
	Phosphoric Acid, reverted	10.00	10.00
	Potash	2.00	2.00
Nitrate of Soda	Nitrogen	13.00	13.00
Orchard Special	Nitrogen	5.00	5.00
	Phosphoric Acid, reverted	10.00	10.00
	Potash	4.00	4.00
Potash Special	Nitrogen	.82	.82
	Phosphoric Acid	8.00	8.00
	Potash	10.00	10.00
Superphosphate	Phosphoric Acid	17.50	17.50
Fish and Bone	Nitrogen		4.00
	Phosphoric Acid, reverted		12.00
	Potash, soluble		2.50
Lilly's Sheep Manure	Nitrogen		1.50
	Phosphoric Acid		1.50
	Potash		1.50

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent)		
		1921	1922
MARINE PRODUCTS CO., Tacoma, Wash.			
Clark's Special Wenatchee Orchard Dressing	Nitrogen	6.00	6.00
	Phosphoric Acid	10.00	10.00
	Potash	4.00	4.00
Puyallup Brand Berry Fertilizer	Nitrogen	2.00	2.00
	Phosphoric Acid	10.00	10.00
	Potash	2.00	2.00
Potato Special, Marproco Brand	Nitrogen	2.00	....
	Phosphoric Acid	10.00	....
	Potash	4.00	....
Marproco Brand Tomato Special	Nitrogen	3.00	....
	Phosphoric Acid	8.00	....
	Potash	6.00	....
Animal Bone Meal	Nitrogen	2.50	....
	Phosphoric Acid	22.00	....
"Pep" Fertilizer	Nitrogen	....	6.00
	Phosphoric Acid, soluble	....	5.00
	Phosphoric Acid, reverted	....	5.00
	Phosphoric Acid total	....	10.00
	Potash	....	4.00
Fish Meal Fertilizer	Nitrogen in ammonia	....	6.00
	Phosphoric Acid	....	10.00
Tankage	Nitrogen	....	4.00
	Phosphoric Acid	....	12.00
Sheep Manure	Nitrogen	1.50	1.50
	Phosphoric Acid	1.00	1.00
	Potash	1.50	1.00
THE MOUNTAIN COPPER CO., San Francisco, Cal.			
"Mococo" Superphosphate	Phosphoric Acid, soluble	16.50	16.50
	Phosphoric Acid, reverted	1.00	1.50
	Phosphoric Acid, insoluble	.50	.50
	Phosphoric Acid total	18.00	18.00
NITRATE AGENCIES CO., Seattle, Wash.			
Nitrate of Soda	Nitrogen total	15.00	15.00
NORTH PACIFIC SEA PRODUCTS CO., Seattle, Wash.			
Whale Meat and Bone	Nitrogen in ammonia	6.00	7.00
	Phosphoric Acid	10.00	15.00
Whale Meat and Blood	Nitrogen in ammonia	10.00	12.00
	Nitrogen total	....	10.00
Whale Bone Meal	Nitrogen	....	8.00
	Phosphoric Acid	....	20.00
THE PACIFIC GUANO & FERTILIZER CO., San Francisco, Cal.			
"Gromore"	Nitrogen	6.00	6.00
	Phosphoric Acid, soluble	8.50	9-10.00
	Phosphoric Acid, insoluble	.50	....
	Phosphoric Acid total	9.00	....
	Potash, soluble	5.00	5.00

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent)		
		1921	1922
PORTLAND SEED CO., Portland, Ore.			
Bone Meal	Nitrogen	3.92	4.00
	Phosphoric Acid, soluble	.51	....
	Phosphoric Acid, reverted	7.19	....
	Phosphoric Acid, insoluble	12.30	....
	Phosphoric Acid total	20.00	20.00
Diamond Lawn Fertilizer	Nitrogen	3.00	2.49
	Phosphoric Acid, soluble	2.05	1.57
	Phosphoric Acid, reverted	4.44	2.92
	Phosphoric Acid, insoluble	3.29	7.51
	Phosphoric Acid total	9.78	....
Diamond Plant Food	Nitrogen	5.00	4.90
	Phosphoric Acid, soluble	8.24	....
	Phosphoric Acid, insoluble	1.76	....
	Phosphoric Acid total	10.00	7.60
	Potash, soluble	9.10	10.00
Diamond Vegetable Fertilizer	Nitrogen	2.85	3.33
	Phosphoric Acid, soluble	2.85	1.83
	Phosphoric Acid, reverted	4.09	3.16
	Phosphoric Acid, insoluble	4.61	....
	Phosphoric Acid total	11.55	10.57
	Potash, soluble	1.90	1.07
Potash-American Kainit	Potash	9.50	....
Superphosphate	Phosphoric Acid, soluble	17.60	16.00
Muriate of Potash	Potash	....	50.00
	Chlorine	....	47.50
Nitrate of Soda	Nitrogen	....	15.00
POULTRY FERTILIZER CO., Seattle, Wash.			
Poultry Guano	Nitrogen in ammonia	....	3.25-4.75
	Phosphoric Acid as bone phosphate	....	3.25-4.25
	Potash	....	1.00-1.80
THE PUYALLUP & SUMNER FRUIT GROWERS ASSN., Puyallup, Wash.			
P. & S. F. G. A. Fertilizer	Nitrogen	....	2.25
	Phosphoric Acid, soluble	....	8.90
	Phosphoric Acid, reverted	....	3.00
	Phosphoric Acid, insoluble	....	2.00
	Phosphoric Acid total	....	13.90
	Potash	....	7.60
	Chlorine	....	6.10
RANDALL-McLOUGHLIN, Seattle, Wash.			
Invicta Fertilizer	Nitrogen total	2.00	....
	Phosphoric Acid	10.00	....
	Potash	2.00	....
ROBINSON FISHERIES CO., Anacortes, Wash.			
"Rofico"	Nitrogen	10.00	....
	Phosphoric Acid	8.00	....
SEA PRODUCTS CO., Seattle, Wash.			
Sea-Pro-Co. Grass & Rose Food	Nitrogen	5.70-8.24	7-10.00
	Phosphoric Acid	2-3.00	2-3.00

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent)		
		1921	1922
Fish Meal	Nitrogen	9.03	
	Phosphoric Acid	6.31	
Sea-Pro-Co. Plant Food	Nitrogen		5-8.00
	Phosphoric Acid		2.50-4.00
SEATTLE SEED CO., **Seattle, Wash.**			
Bone Meal	Nitrogen	2.20	
	Phosphoric Acid, soluble	24.38	
	Phosphoric Acid total	53.24	
	Potash	.43	
SPOKANE FERTILIZER CO., **Spokane, Wash.**			
Sheep Guano	Nitrogen	1.19-2.26	1.51
	Phosphoric Acid	1.42-3.36	1.05
	Potash	1.18-1.96	1.96
Lawn Fertilo	Nitrogen		5.00
	Phosphoric Acid		3.00
	Potash		4.00
Berry Fertilo	Nitrogen		4.00
	Phosphoric Acid		8.00
	Potash		5.00
Garden Fertilo	Nitrogen		4.00
	Phosphoric Acid		8.00
	Potash		5.00
Orchard Fertilo (clean)	Nitrogen		10.00
	Phosphoric Acid		.50
	Potash		1.00
Orchard Fertilo (cover)	Nitrogen		5.00
	Phosphoric Acid		.50
	Potash		1.00
STANDARD CHEMICAL CO., **Tacoma, Wash.**			
"Winner Brand" 2-10-2	Nitrogen	2.00	
	Phosphoric Acid	10.00	
	Potash	2.00	
STOCK & PLANT FOOD CO., **Tacoma, Wash.**			
Scott's Clean Cultivated Orchard Dressing	Nitrogen in ammonia		6.00
	Phosphoric Acid, reverted		4.00
	Phosphoric Acid, insoluble		4.00
	Phosphoric Acid total (from bone)		8.00
	Potash		6.00
Scott's Fruiting Fertilizer	Nitrogen in ammonia		5.00
	Phosphoric Acid, reverted		4.00
	Phosphoric Acid, insoluble		4.00
	Phosphoric Acid total		8.00
	Potash		10.00
Carstens' Blood & Bone Tankage Fertilizer	Nitrogen in ammonia		3.50
	Phosphoric Acid, reverted		5.20
	Phosphoric Acid, insoluble		5.10
	Phosphoric Acid total		10.00
Scott's Steamed Animal Bone Meal Fertilizer	Nitrogen in ammonia		3.50
	Phosphoric Acid, reverted		11.00
	Phosphoric Acid, insoluble		11.00
	Phosphoric Acid total		22.00
Scott's Ground Dried Animal Blood Meal Fertilizer	Nitrogen in ammonia		12.50
Steam Dried Sheep Guano Fertilizer	Nitrogen in ammonia		1.50
	Phosphoric Acid, reverted		.50
	Phosphoric Acid, insoluble		.50
	Phosphoric Acid total		1.00
	Potash		2.00

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent)	1921	1922
Scott's Special Tuber-Root & Bean Fertilizer	Nitrogen in ammonia		3.00
	Phosphoric Acid, reverted		5.00
	Phosphoric Acid, insoluble		5.00
	Phosphoric Acid total (from bone)		10.00
	Potash		7.00
Randall's Special Garden & Lawn Fertilizer, also Scott's Special Garden & Lawn Fertilizer	Nitrogen in ammonia		2.00
	Phosphoric Acid, reverted		4.00
	Phosphoric Acid, insoluble		4.00
	Phosphoric Acid total		8.00
	Potash		4.00
SWIFT & CO., North Portland, Ore.			
Red Steer "A" Special	Nitrogen total	3.29	3.00
	Phosphoric Acid	12.25	11.9
	Potash, soluble	2.00	2.00
Red Steer "B" 2-12-3	Nitrogen	1.65	1.6
	Phosphoric Acid	13.50	13.2
	Potash, soluble	3.00	3.00
	Chlorine	3.50	2.4
Red Steer "C" 4-7-6	Nitrogen	2.47	2.5
	Phosphoric Acid	11.75	11.5
	Potash, soluble	4.00	4.00
Red Steer "D"	Nitrogen	3.29	3.3
	Phosphoric Acid	9.1	8.7
	Potash, soluble	6.00	6.00
Red Steer "E"	Nitrogen	2.47	2.5
	Phosphoric Acid	10.50	11.5
	Potash, soluble	10.00	10.00
Red Steer "M"	Nitrogen	2.47	2.5
	Phosphoric Acid	13.75	13.6
	Potash, soluble	1.00	1.00
Red Steer Acid Phosphate	Phosphoric Acid	18.25	18.3
Red Steer "Blood Meal"	Nitrogen total	13.57	13.2
	Phosphoric Acid	....	....
Red Steer "Bone Meal"	Nitrogen total	3.50	2. to 3.5
	Phosphoric Acid	28.00	24. to 28.
Red Steer Hop Dressing	Nitrogen total	9.05	9.00
	Phosphoric Acid	14.75	14.9
Red Steer Orchard Dressing	Nitrogen total	10.70	10.00
	Phosphoric Acid	9.00	9.00
Red Steer "6-7-8"	Nitrogen total	4.94	4.9
	Phosphoric Acid total	7.03	9.4
	Potash, soluble	8.00	8.00
Red Steer "Muriate of Potash"	Potash, soluble	16. to 52.	56.00
Red Steer "Nitrate of Soda"	Nitrogen total	15.21	15.00
"Roselawn"	Nitrogen total	4.90	4.9
	Phosphoric Acid	21.00	21.00
Red Steer Tankage No. 1	Nitrogen	7.40	7.40
	Phosphoric Acid	9.50	10.00
Red Steer Tankage No. 5	Nitrogen	4.10	4.10
	Phosphoric Acid	13.80	16.00

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent)	1921	1922
Red Steer "O" Fertilizer	Nitrogen in nit.	....	1.3
	Nitrogen total	....	2.1
	Phosphoric Acid, soluble	....	8.1
	Phosphoric Acid, reverted	....	.9
	Phosphoric Acid, insoluble	....	1.3
	Phosphoric Acid total	....	10.3
	Potash total	....	2.3
Red Steer 2-14-1 Fertilizer	Nitrogen in nitr.	....	1.00
	Nitrogen total	....	1.6
	Phosphoric Acid, soluble	....	13.3
	Phosphoric Acid, reverted	....	.7
	Phosphoric Acid, insoluble	....	1.3
	Phosphoric Acid total	....	15.3
	Potash	....	1.00
Red Steer Fish Guano	Nitrogen	....	8.2
	Phosphoric Acid, reverted	....	5.00
	Phosphoric Acid, insoluble	....	5.00
	Phosphoric Acid total	....	10.00
Red Steer Sulphate of Ammonia	Nitrogen in amm.	....	2.06
Red Steer Hop Fertilizer	Nitrogen	....	6.6
	Phosphoric Acid total	....	1.41
U. S. POTASH NITRATE CO., Seattle, Wash.			
6-10-4	Nitrogen in ammonia	....	6.00
	Phosphoric Acid	....	10.00
	Potash, soluble	....	4.00
WALLA WALLA MEAT & COLD STORAGE CO., Walla Walla, Wash.			
Ground Tankage	Nitrogen in nitr.	5.00	....
	Phosphoric Acid	16.00	....
Dried Blood	Nitrogen in nitr.	12.00	....
	Nitrogen in amm.	15.00	14.00
	Nitrogen total	27.00	12.00
Tankage	Nitrogen total	....	6.00
	Phosphoric Acid	....	14.00
	Potash, as bone phos.	....	31.00
Lawn Fertilizer	Nitrogen as amm.	....	8.00
	Phosphoric Acid	....	12.00
	Potash	....	0.26
WALLA WALLA PRODUCE CO., Walla Walla, Wash.			
Sheep Guano			
WESTERN FERTILIZER CO., San Francisco, Cal.			
"Wizard"	Nitrogen	6.00	6.00
	Phosphoric Acid	9.00	9. to 10.
	Potash	5.00	5.00
WOODRUFF-BOYCE SEED CO., NOW J. A. BOYCE SEED CO., Seattle, Wash.			
Superior Lawn & Rose Fertilizer	Nitrogen	2.50	3.00
	Phosphoric Acid	10.00	12.00
	Potash	4.00	4.00

REGISTERED FERTILIZERS—Continued.

Number of firms registered in 1921	29		
Number of firms registered in 1922	31	60	
Number of brands registered in 1921	74		
Number of brands registered in 1922	96	170	
Number of Ingredients, 1921, 159 at $6.00			$954 00
Number of Ingredients, 1922, 220 at $6.00			1,320 00
Total fees			$2,274 00

CONDEMNATIONS.

FOODS	No. Cans	Totals
CANNED GOODS:		
Fish—		
Codfish	481,625	
Fish Sausage	3,072	
Grayfish	85	
Herring	10	
Mackerel	30	
Miscellaneous	260	
Salmon	1,114,283	
Sardines	20,440	
Shellfish	150	
Smoked Fish	178	
Smoked Fish Loaf	37	
		1,620,190
Fruits—		
Apple Butter	66	
Assorted Fruits	150	
Australian Jams	761	
Berries (assorted)	118	
Jelly	1	
Olives	57	
Preserves	1	
		1,154
Meats—		
Bacon	10	
Beef	6	
Corned Beef	312	
Roast Beef	312	
Chicken	1	
Miscellaneous	2	
Vienna Sausage	2	
Whale Meat	88	
		733
Milk—		
Substitute Milk	2,640	
Canned Milk	31,967	
		34,607
Plum Pudding	....	5
Soup	....	1
Assorted—		
Assorted	62	
Beans	94	
Beets	11	
Chili Con Carne	13	
Corn	76	
Dill Pickles	16	
Okra	24	
Peas	251	
		547
Vegetables—		
Sauerkraut	105	
Spinach	604	
String Beans	1,056	
Tomatoes	349	
		2,114
	No. Bottles	
BOTTLED GOODS—		
Apple Butter	2	
Catsup	14	
Mustard	26	
Olives	72	
Pickles	154	
Peanut Butter	94	
Salad Dressing	11	
Sauce	2	
		375

CONDEMNATIONS—Continued.

FOODS	No. Pounds	Totals
BULK GOODS—		
Baking Powder	3	
Bread Crumbs	15	
Cheese	75	
Confectionery	65	
Coloring	1	
Cookies	10	
Crackers	730	
Egg Powder	75	
		904
Cereals—		
Assorted Cereals	737	
Oatmeal	405	
Pearls of Wheat	20	
Rice	100,000	
Spaghetti	628	
Tapioca	200	
		101,990
Fish—		
Assorted Frozen	14,960	
Codfish	40,120	
Dry Herring	30	
Fish	40	
Halibut	29	
Kippered Salmon	34	
Salmon	12,150	
		68,150
Flour & Meals—		
Assorted Flours	585	
Assorted Cereals	60	
Cream Meal	45	
Corn Meal	2,458	
Flour	212	
Graham	100	
Hominy	45	
Pancake Flour	63	
Roman Meal	25	
Rye	190	
Substitute	425	
Whole Wheat	40	
		4,248
Fruits—		
Apples	12,420	
Canteloupes	59	
Currants	66	
Cranberries	25	
Dates	525	
Figs	65	
		13,160
Fruits—		
Dried Grapes	50	
Grapes	1,000	
Oranges	50	
Peaches	10	
Prunes	2,195	
Raisins	448¼	
St. John's Bread	1,500	
Strawberries	36,000	
		41,253¼
Meats—		
Bacon	53	
Beef	1,153	
Corned Beef	583	
Cooked Meat	7½	
Hearts	5	
Meat	3,579½	
Pork	1,619	
Sausage—Hamburger	419¼	
Scraps	26	
Veal	7,055	
Weinies	19½	
		14,519¾

REGISTERED FERTILIZERS.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent)	1921	1922
THE AMERICAN LIGNAITE CO., Tacoma, Wash.			
Lignaite Solution	Nitrogen.		
	Phosphoric Acid	6.30	....
	Potash	6.66	....
Prof. Scammell's "Lignaite Fertilizer"	Nitrogen in ammonia	1.07	....
	Phosphoric Acid	.20	....
	Potash	.20	....
AMERICAN NITROGEN PRODUCTS CO., Seattle, Wash.			
Soda Nitrogen	Nitrogen	15.00	....
AMERICAN PACIFIC WHALING CO., Bay City, Wash.			
Whale Bone Meal	Nitrogen		3.00
	Phosphoric Acid		20.00
Whale Meat and Blood	Nitrogen		12.00
ANACONDA COPPER MINING CO., Anaconda, Mont.			
Anaconda 8-13-6	Nitrogen total		8.00
	Phosphoric Acid, soluble		10.34
	Phosphoric Acid, reverted		2.66
	Phosphoric Acid, insoluble		1.03
	Phosphoric Acid total		14.03
	Potash, soluble		6.00
	Potash, chloride		4.08
Anaconda Treble Phosphate	Phosphoric Acid, soluble		38.00
	Phosphoric Acid, reverted		6-7.00
	Phosphoric Acid, insoluble		3-4.00
	Phosphoric Acid total		48.00
THE ANDREWS-ESCOTT CO., Vancouver, B. C.			
"Fertabs"	Nitrogen		13.57
	Phosphoric Acid, soluble		17.86
	Phosphoric Acid, citric sol.		18.74
	Phosphoric Acid total		18.74
	Potash, soluble		11.00
ARMOUR & CO., Spokane, Wash.			
Ground Sheep Manure	Nitrogen total	1.97	.. ..
	Nitrogen in ammonia	2.39	....
	Phosphoric Acid, insoluble	1.46	....
	Potash, soluble	2.83	....
Bone Meal	Nitrogen total	3.95	4.39
	Nitrogen in ammonia	4.81	....
	Phosphoric Acid total	22.64	23.99
Ground Blood	Nitrogen total	13.62	13.14
	Nitrogen in ammonia	16.54	....
Ground Tankage	Nitrogen total	6.84	5.58
	Nitrogen in ammonia	8.30	....
	Phosphoric Acid	7.42	7.71
BAKER & CO., White Salmon, Wash.			
Eden Brand Pulverized Sheep Manure	Nitrogen total		2.37
	Nitrogen in ammonia		2.88
	Phosphoric Acid		1.52
	Potash		3.06

REGISTERED FERTILIZERS—Continued.

FIRM NAME AND BRANDS	GUARANTEED COMPOSITION (Per Cent)	1921	1922
THE BARRETT CO., Sales Agents, New York City.			
Arcadian Sulphate of Ammonia	Nitrogen	20.75	20.75
BARTON & CO., Seattle, Wash.			
Bone Meal	Nitrogen	4.08	....
	Phosphoric Acid	24.97	....
Tankage	Nitrogen	8.83	8.50
	Phosphoric Acid	8.22	6.00
Dried Blood	Nitrogen	....	12.00
Granulated Bone	Nitrogen	....	3.50
	Phosphoric Acid	....	20.00
S. BLACHLEY & CO., Starbuck, Wash.			
Twin Buck Brand Sheep Guano	Nitrogen	2.00	2.00
	Phosphoric Acid	1.25	1.25
	Potash	1.84	1.84
CARSTENS PACKING CO., Spokane, Wash.			
Dried Blood	Nitrogen in ammonia	14.43	....
Tankage	Nitrogen in ammonia	7.95	....
	Phosphoric Acid, bone phosphate	22.97	....
CARSTENS PACKING CO., Tacoma, Wash.			
Bone Meal	Nitrogen in ammonia	3-4.00	....
	Phosphoric Acid total	20-23.00	....
Dried Blood	Nitrogen in ammonia	12-14.00	....
Sheep Guano	Nitrogen in ammonia	2-3.00	....
Tankage	Nitrogen in ammonia	6½-7½	....
	Phosphoric Acid	9-10.00	....
COLUMBIA & OKANOGAN NURSERY CO., Wenatchee, Wash.			
Sheep Manure	Nitrogen total	2.00	....
	Phosphoric Acid	1.00	....
	Potash, soluble	2.00	....
EARP-THOMAS CULTURES CORP., New York City, N. Y.			
Stim-U-Plant Tablets	Nitrogen total	11.00	11.00
	Phosphoric Acid, soluble	10.52	10.52
	Phosphoric Acid, reverted	1.19	1.19
	Phosphoric Acid, insoluble	.36	.36
	Phosphoric Acid total	12.00	12.00
	Potash	15.00	15.00
	Potash, chlorine	1.60	1.60
JAMES HENRY, Seattle, Wash.			
Dry Blood (1921)	Nitrogen	15.00	....
Unground Blood (1922)	Nitrogen	....	16.00
Tankage—unground	Nitrogen as ammonia	6.08	6.05
	Phosphoric Acid, bone phosphate	23.03	30.00

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS—Continued.

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS		
		Minimum Per Cent Crude Fat	Minimum Per Cent Crude Protein	Maximum Per Cent Crude Fiber
HOG FEED—				
Berkshire	Albers Bros. Mill. Co.	5.00	11.00	5.00
Molasses Hog Feed	Albers Bros. Mill. Co.	5.00	13.00	6.50
Dry Hog Feed	Albers Bros. Mill. Co.	5.00	14.00	8.00
Porko	Albers Bros. Mill. Co.	5.50	17.00	10.00
Swino	Albers Bros. Mill. Co.	5.00	13.00	6.50
Auburn	Auburn Milling & Gr. Co.	4.00	12.00	9.50
Pig Meal	Blatchford Calf M. Co.	5.00	18.00	7.00
Hog Feed	Brewer & Co.	5.75	15.00	7.25
Purity	Coast Trading Co.	5.00	15.00	10.00
Morfat	Fisher Fl. Mills Co.	5.00	13.00	7.00
Morpork	Fisher Fl. Mills Co.	4.00	15.00	6.00
Hog Feed	Galbraith & Co.	3.00	14.00	7.00
Hog Fattener	Kerr-Gifford & Co.	5.00	16.00	6.00
Hog Feed	Kerr-Gifford & Co.	4.50	17.00	9.00
Pig Meal	The Chas. H. Lilly Co.	5.00	24.00	5.00
Makemfat	The Chas. H. Lilly Co.	4.00	15.00	10.00
Olympic Hog Grower	Portland Fl. Mills Co.	4.50	17.00	9.00
Kaskade	Portland Fl. Mills Co.	4.00	16.00	9.00
Berkshire Chop	Puyallup Feed & Sup. Co.	3.00	18.00	8.00
Blue Bag Pig Meal	Sears Roebuck & Co.	4.00	14.00	8.00
Hog Feed Satisfie	Stretch Co. R. J.	....	....	....
Sunnybrook	Swift & Co.	2.50	12.00	7.50
Pig-a-Boo Digester Tankage	Swift & Co.	6.00	60.00	2.50
X-Tre Hog Feed	Sumner Gr. & Mill. Co.	4.00	15.00	8.00
O-K Hog Feed—5763	Vollmer Clearwater Co.	4.00	12.00	10.00
O-K Hog Feed—5983	Vollmer Clearwater Co.	4.00	12.00	9.90
Wemco Hog Feed	Wenatchee Mill. Co.	5.00	17.00	10.00
Quality Hog Feed	Wenatchee Prod. Co.	3.00	18.00	9.00
Yakima Hog Feed	Yakima Mill. Co.	3.63	12.25	5.55
HORSE FEED—				
Percheron	Albers Bros. Milling Co.	3.00	10.00	10.00
LAMB MEAL—				
Blatchford's Lamb Meal	Blatchford Calf Meal Co.	4.00	20.00	6.00
Lamb Meal	The Chas. H. Lilly Co.	5.00	24.00	5.00
Kaskade Sheep Feed	Portland Flour Mills Co.	1.50	10.00	10.00
LOW GRADE FLOUR—				
Low Grade Flour	Crown Mills	3.00	14.00	1.00
Low Grade Flour	Judith Milling Co.	2.80	14.50	3.50
Wheat Red Dog	Fisher Flouring Mills Co.	3.00	15.00	5.00
MILK FEEDS—				
Buttermilk, Grain and Bone Starting Feed	G. E. Conkey Co.	3.00	12.00	4.00
Buttermilk, Meat, Grain and Bone Mash	G. E. Conkey Co.	4.00	18.00	6.00
Buttermilk, Meat and Grain Growing Mash	G. E. Conkey Co.	4.00	18.00	5.00
Golden Rod Buttermilk Egg Mash	Crown Mills	5.00	19.00	8.00
Golden Rod Buttermilk Chick Mash	Crown Mills	5.00	19.00	8.00
Collis Process Pure Dried Buttermilk	Collis Products Co.	5.50	30.00	....
Buttermilk Mash	Fisher Flouring Mills	4.00	20.00	6.00
Chick Starter Milk Mash	Fisher Flouring Mills	4.00	15.00	6.00
Buttermilk Mash	Garden City Feed Mill	7.50	18.45	9.40
A-1 Buttermilk Mash	Kenworthy Grain & Mill. Co.	4.50	18.00	7.00
A-1 Buttermilk Chick Mash	Kenworthy Grain & Mill. Co.	4.50	17.00	7.00
Red Comb Buttermilk Mash	Kenworthy Grain & Mill. Co.	4.50	20.00	10.00
Buttermilk Egg Mash	Kerr-Gifford & Co., Inc.	5.00	21.00	7.00
Buttermilk Mash	The Chas. H. Lilly Co.	6.00	20.00	6.00

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS—Continued.

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS		
		Minimum Per Cent Crude Fat	Minimum Per Cent Crude Protein	Maximum Per Cent Crude Fiber
MILK FEEDS—Continued—				
Buttermilk Crate Fattening Mash	Northern Flour Mills Co.	4.00	12.00	8.00
Developing Mash with Buttermilk	Northern Flour Mills Co.	4.50	18.00	10.00
Baby Chick Starter Mash with Buttermilk	Northern Flour Mills Co.	2.50	10.00	5.00
Buttermilk Egg Mash	Northern Flour Mills Co.	4.00	17.00	10.00
Olympic Chick Mash with Buttermilk	Portland Fl. Mills Co.	4.00	14.00	5.00
Olympic Buttermilk Growing Mash	Portland Fl. Mills Co.	4.00	15.00	5.00
Olympic Buttermilk Egg Mash	Portland Fl. Mills Co.	4.50	18.00	9.00
Olympic Hog Feed with Dried Buttermilk	Portland Fl. Mills Co.	4.00	16.00	7.00
Rex Buttermilk Chick Mash	Portland Feed Mills Co.	4.00	14.50	5.00
Rex Buttermilk Egg Mash	Portland Feed Mills Co.	4.50	17.00	8.00
Invicta Milk Mash	Randall-McLoughlin	4.30	20.00	8.00
Silver Quill Chick Milk Mash	Sears Roebuck & Co.	4.50	18.00	7.00
MIXED FEEDS—				
Albers' Grain Barley and Oat Feed	Albers Bros. Mill Co.	4.00	13.00	10.00
All Grain Chop	Albers Bros. Mill Co.	4.00	8.00	10.00
Cypress All Grain Chop	Anacortes Ice Co.	....	....	....
Crescent Chop	Crescent Mills	....	....	....
Olympic Chop Feed	Portland Fl. Mills Co.	5.00	15.00	10.00
Kaskade Chop Feed	Portland Fl. Mills Co.	4.00	12.00	10.00
Barley Chop A	Kerr-Gifford & Co.	1.50	11.00	5.00
Berkshire Chop	Puyallup Feed & Sup. Co.	3.00	18.00	8.00
All Grain Chop	Sperry Flour Co.	3.00	8.00	7.50
Chop Satisfie	R. J. Stretch & Co.	....	....	....
Hammond's Best All Grain Chop	Seattle Flour Mills	4.00	13.00	9.00
W. P. Co. Chop	Western Produce Co.	....	....	....
White's Chop	White Feed Co.	....	....	....
Mill Run Feed	Colton Flour Mills	2.80	14.25	8.20
Wheat Mill Feed	Colton Flour Mills	3.00	13.00	10.00
Wheat Mill Run	Diamond Flour Mills	3.00	12.00	10.00
Wheat Mill Feed	Kennewick Flour Mills	2.00	10.00	12.00
Mill Run	The Chas. H. Lilly Co.	3.00	13.00	12.00
Wheat Mill Run	Pomeroy Flour Mills	3.00	13.00	10.00
Millrun	Prosser Flour Mills	5.23	15.13	8.41
Mill Feed	Ritzville Flouring Mills	4.00	14.50	9.90
Wheat Mill Run	R. P. Tjossem & Son	3.00	13.00	10.00
Millrun	Touchet Milling Co.	3.02	15.38	9.32
Millrun	Vollmer Clearwater Co.	3.00	17.00	8.50
Bran and Shorts	Chas. E. Anderson	2.85	17.60	6.77
Mixed Feed	Boyd-Conlee Co.	4.00	12.00	10.00
Wheat Mixed Feed	Centennial Mill Co.	3.00	13.00	10.00
Heavy Mixed Feed	Centennial Mill Co.	4.00	11.00	8.00
Wheat Mixed Feeds	Collins Flour Mills	3.00	12.00	10.00
Wheat Mixed Feeds	Columbia River Mill Co.	3.00	13.00	10.00
Wheat Mixed Feeds	Crown Mills	3.00	12.00	10.00
Eureka Wheat Mixed Feed	Eureka Flour Mills	3.00	12.00	10.00
Grain, Wheat and Mill Run	Galbraith & Co.	3.00	14.00	10.00
Mixed Bran, Shorts and Screenings	Judith Milling Co.	3.80	14.00	10.00
Wheat Mixed Feed	Kalispell Flour Mill Co.	4.00	16.00	10.00
Wheat Mixed Feed	Kerr-Gifford & Co.	3.00	12.00	10.00
Ground Barley	Kerr-Gifford & Co.	1.50	11.00	5.00
All Grain Feed	Harry M. Leckenby, Inc.	....	....	....
Mixed Feed	The Chas. H. Lilly Co.	3.00	13.00	10.00
Wheat Mixed Feed	Mabton Milling Co.	3.00	13.00	10.00
Bran and Shorts	Mabton Milling Co.	3.00	14.00	9.00
Wheat Mixed Feed	Martin Gr. & Mill. Co.	3.00	13.00	10.00
Wheat Mixed Feed	Miller Flour Mills	3.00	12.00	10.00
Wheat Bran and Shorts	Miller Flour Mills	3.00	13.00	10.00

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS—Continued.

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS		
		Minimum Per Cent Crude Fat	Minimum Per Cent Crude Protein	Maximum Per Cent Crude Fiber
MIXED FEEDS—Continued—				
Montco Mixed Feed	Montana Flour Mills Co.	4.40	16.00	10.00
Wheat Mixed Feed	Northern Fl. Mills Co.	3.00	12.75	9.00
Mixed Feed (mill run)	Novelty Mill Co.	3.00	13.00	10.00
Bran and Shorts	Pasco Flour Mills Co.	2.00	12.00	8.00
Wheat Mixed Feed	Peacock Mills Co.	3.00	12.00	10.00
Mixed Feed	Portland Fl. Mills Co.	3.00	12.00	10.00
Wheat Mixed Feed	Preston-Shaffer Mill. Co.	3.00	12.00	10.00
Wheat Mixed Feed 80s	Ritzville Flouring M. Co.	3.00	13.00	10.00
Occident Wheat Feed	Russell-Miller Mill. Co.	4.50	15.00	10.00
Hammond's Best	Seattle Flour Mills	3.00	13.00	10.00
Wheat Mixed Feed	Sperry Flour Co.	3.00	13.00	10.00
Wheat Mixed Feed	Spokane Flour Mills	3.00	13.00	10.00
Wheat Mixed Feed	Sprague Roller Mills	3.00	13.00	10.00
Wheat Mixed Feed	Superior Milling Co.	3.00	13.00	10.00
Wheat Mixed Feed	Tacoma Grain Co.	3.00	13.00	10.00
Wheat Mixed Feed	Vollmer Clearwater Co.	3.00	13.00	10.00
Wheat Mixed Feed	Wasco Warehouse Mill. Co.	3.00	13.00	10.00
Wheat Mixed Feed	Washington Gr. & Mill. Co.	3.00	13.00	10.00
Wheat Mixed Feed	Weiser Milling & El. Co.	3.00	15.00	10.00
Wheat Mixed Feed	Wenatchee Milling Co.	3.00	13.00	10.00
Wheat Mixed Feed	Fisher Flour. Mills Co.	3.00	13.00	10.00
MOLASSES FEEDS—				
Albers' Molasses Feed	Albers Bros. Mill. Co.	4.00	14.00	10.00
Molas-O-Meal	Albers Bros. Mill. Co.	4.00	16.00	10.00
Albina Molasses Feed	Kerr-Gifford & Co.	3.00	10.00	10.00
Molasses Dairy Feed	Kerr-Gifford & Co.	4.00	17.00	10.00
Olympic Dairy Feed	Portland Fl. Mills Co.	4.00	16.00	10.00
Kaskade Molasses Feed	Portland Fl. Mills Co.	8.00	10.00	10.00
Molasses Dairy Feed	James Brewer & Co.	3.50	11.00	9.00
OIL MEAL FEEDS—				
Cocoanut Meal	C. A. Babcock Co.	6.00	19.00	11.00
Cottonseed Cake	Calif. Cotton Oil Co.	6.00	40.00	13.00
Cottonseed Meal	Calif. Cotton Oil Co.	6.00	40.00	13.00
Cocoanut Meal	Galbraith & Co.	7.00	18.00	12.00
Linseed Meal—Oil Process	Galbraith & Co.	13.00	25.00	10.00
Oil Meal	Galbraith & Co.	8.00	28.00	10.00
Soya Bean Meal	Galbraith & Co.	5.00	42.00	6.00
Peanut Meal	Galbraith & Co.	8.00	38.00	10.00
Soya Bean Feed	Galbraith & Co.	8.00	28.00	5.00
A.1 Cottonseed Cake or Meal	Globe Oil Mills	36.00	6.00	13.00
Kaola Meal	The Palmolive Co.	7.18	16.30	5.00
Soy Bean Meal	Portland Fl. Mills Co.	5.00	41.00	6.00
Cocoanut Meal	Portland Fl. Mills Co.	8.00	19.00	13.00
Cocoanut Cake Meal	Stanwood Grain Co.	16.25	17.75	8.00
POULTRY FEEDS—				
Chick Feed	Albers Bros. Mill. Co.	2.50	11.00	3.00
Grange Chick Feed	Associated Grange Warehouse			
Central Star Chick Feed	Central Hay & Grain Co.	3.50	14.00	5.50
Quality Chick Feed	Falls City Mill & Feed Co.	3.00	12.00	4.00
Golden Rod Chick Feed	Crown Mills	2.00	11.00	3.00
F. J. F. Chick Food & Growing Food	F. J. Farley			
Chick Food	Fisher Fl. Mills Co.	2.00	10.00	4.00
Chick Food	Garden City Feed Mill			
Clover Leaf Chick Feed	The Inland Seed Co.	2.00	9.00	5.00
A-1 Chick Feed	Kenworthy Gr. & Mill. Co.	2.50	10.00	3.00
Kerr's Chick Feed	Kerr-Gifford & Co.	3.00	9.50	4.00
Ruby Comb Chick Feed	Lakin Milling Co.			
Pafco Chick Food	Pacific American, Fish.			
Chick Feed	P. A. Peterson			
Pu-L-Up Chick Feed	Puyallup & Sumner F. G. Co.	1.90	13.19	1.95
Baby Chick Feed	Sperry Flour Mill Co.	2.00	12.00	3.00

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS—Continued.

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS		
		Minimum Per Cent Crude Fat	Minimum Per Cent Crude Protein	Maximum Per Cent Crude Fiber
POULTRY FEEDS—Continued—				
Royal Chick Feed	Rudy-Patrick Seed Co.	8.00	10.00	8.00
Yakima Chick Food	Yakima Milling Co.	5.28	18.50	9.82
Wenco Chick Feed	Wenatchee Milling Co.	4.00	11.00	8.00
Progressive Chick Mash	Albers Bros. Mill. Co.	4.00	15.00	5.00
Blatchford's Chick Mash	Blatchford Calf Meal Co.	4.00	20.00	7.50
Chick Mash	Boyd-Conlee Co.	4.00	18.00	10.00
Central Star Chick Mash	Central Hay & Grain Co.	3.50	15.00	8.50
Purity Chick Mash	Coast Trading Co.	4.50	14.00	6.00
Golden Rod Chick Mash & Growing Mash	Crown Mills Co.	5.00	18.00	8.00
F. J. F. Chick Mash for Young Chicks	F. J. Farley	4.00	13.00	10.00
Ford's Chick Mash	Ford Grain Co.	10.00	12.50	8.00
A-1 Chick Mash	Kenworthy Grain & Mill Co.	4.00	16.00	7.00
Diamond L. Chick Mash	Harry N. Leckenby, Inc.	5.00	18.00	7.00
City Mills Chick Mash	Lehmann Bros.	4.00	14.00	8.00
Shogo Chick Grits	Nebraska Corn Mills	1.00	7.00	2.00
Baby Chick Starter Mash	Northern Flour M. Co.	4.00	14.00	10.00
Pafco Chick Mash	Pacific American Fish.	4.00	13.00	8.00
Chick Mash	Poultry Feed Assn.	3.00	10.00	10.00
Baby Chick Mash	Sperry Flour Co.	3.00	15.00	3.00
X-tre Chick Mash	Sumner Gr. & Milling Co.	3.50	15.00	7.00
Chick Mash	Galbraith & Co.	4.00	16.00	5.00
Chick Mash	Garden City Feed Mills	6.50	16.50	6.00
Lilly's Chick Mash	The Chas. H. Lilly Co.	4.00	14.00	7.00
Chix Starter Mash	Washburn & Wilson Seed Co.	4.00	18.00	8.00
W. C. E. & P. A. Chick Mash.	Wash. Co-op. Egg & Poul. Asn.	4.00	16.00	7.00
Chick Mash	Wash. Co-op. Egg & Poul. Asn.	6.00	15.00	7.00
Chick Starter	Albers Bros. Mill. Co.	3.00	8.00	3.00
Chick Starter	Fisher Flour. Mills Co.	2.00	10.00	4.00
Developing Mash	Albers Bros. Mill. Co.	4.00	17.00	6.00
Dev. Chick Feed	Albers Bros. Mill. Co.	2.00	10.00	3.00
Dev. Scratch	Central Hay & Grain Co.	....	....	....
Central Star Dev. Mash	Central Hay & Grain Co.	8.00	19.00	5.00
Golden Rod Dev. Feed	Crown Mills	4.00	11.00	3.00
Developing Mash	Fisher Flour. Mills Co.	4.50	14.00	5.00
Developing Mash	Galbraith & Co.	4.00	17.00	6.00
A-1 Developing Mash	Kenworthy Gr. & Mill Co.	4.50	16.00	7.00
Chick Developer	Kerr-Gifford & Co.	4.50	14.00	5.00
Developing Mash	Northern Fl. Mills Co.	4.50	18.00	10.00
Pafco Dev. Mash	Pacific American Fish.	4.00	18.00	10.00
Olympic Dev. Mash	Portland Fl. Mills Co.	4.00	15.00	5.00
Pu-L-Up Chick Dev.	Puy. & Sumner F. G. O. Co.	4.92	11.42	1.99
Hammond's Best Chick Food.	Seattle Flour Mills	2.00	12.00	10.00
Grange Best Growing Mash	Associated Grange Warehouse	4.00	16.00	6.00
Purity Growing Mash	Coast Trading Co.	4.75	17.50	6.50
Grow. Feed Form. No. 3	Ford Grain Co.	....	....	....
Growing Food	Fisher Fl. Mills Co.	2.00	10.00	4.00
Growing Mash	Galbraith & Co.	4.00	17.00	6.00
Supreme Growing Food	Garden City Feed Mill	....	....	....
Growing Mash	Globe Gr. & Milling Co.	4.00	16.00	5.00
Ruby Comb Gr. Food	Lakin Milling Co.	....	....	....
Diamond L Gr. Mash	Harry N. Leckenby, Inc.	5.00	20.00	7.00
Diamond L Gr. Food	Harry N. Leckenby, Inc.	....	....	....
Growing Mash	The Chas. H. Lilly Co.	4.00	15.00	6.00
Pafco Grow. Food	Pacific American Fisheries	4.00	12.00	3.00
Rex Growing Mash	Portland Feed Mills Co.	4.00	14.00	5.00
X-tre Growing Mash	Sumner Gr. & Mill. Co.	4.00	15.00	7.00
Growing Mash	Washburn & Wilson Seed Co.	5.00	20.00	8.00
Growing Mash	Wash. Co-op. Egg & P. Assn.	4.00	16.00	6.00
Growing Food	Wash. Co-op. Egg & P. Assn.	....	....	....
Growing Food	Wash. Co-op. Egg & P. Assn.	....	....	....
Growing Mash	Wash. Co-op. Egg & P. Assn.	6.50	17.00	7.10
Wenco Growing Food	Wenatchee Milling Co.	4.00	11.00	8.00
Quality Growing Food	Wenatchee Produce Co.	4.00	16.00	10.00
Quality Growing Mash	Wenatchee Produce Co.	4.00	16.00	10.00
Wenco Dev. Mash	Wenatchee Milling Co.	5.00	15.00	7.00
Fattening Mash	Fisher Fl. Mills Co.	5.00	14.00	5.00

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS—Continued.

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS		
		Minimum Per Cent Crude Fat	Minimum Per Cent Crude Protein	Maximum Per Cent Crude Fiber
POULTRY FEEDS—Continued—				
Kerr's Fattening Mash	Kerr-Gifford Co.	5.00	14.00	6.00
Fattening Food	The Chas. H. Lilly Co.	4.00	15.00	7.00
Olympic Crate Fat.	Portland Fl. Mills Co.	4.00	14.00	5.00
Alber's Egg Maker	Albers Bros. Mill. Co.	4.00	20.00	7.00
Grange Best Egg Mash	Associated Grange Warehouse.	5.00	19.00	7.00
Grange Laying Mash	Associated Grange Warehouse.	5.00	19.00	6.00
Cypress Brd. Mash	Anacortes Ice Co.	4.60	16.00	5.73
Auburn Laying Mash	Auburn Mill. & Grain Co.	4.09	14.07	9.96
Old Crow Egg Mash	C. A. Babcock Co.	4.00	17.00	10.00
Mainstay Lay. Mash	Bayview Milling Co.	5.00	19.00	6.00
Mainstay Egg Mash	Bayview Milling Co.	5.00	20.00	8.00
Blatchford's Egg Mash	Blatchford Calf Meal Co.	4.00	19.00	10.00
B. B. Egg Mash	Banks Bros. Inc	4.00	16.00	10.00
Egg Mash	Brewer & Co.	5.50	20.00	7.00
Thistle Brand Egg Mash	Lehmann Bros.	4.00	15.00	8.00
Laying Mash	Brewer & Co.	4.50	18.00	7.00
Egg Mash	Boyd-Conlee Co.	4.00	18.00	10.00
Egg Mash	Cardle Bros.	6.93	18.70	10.00
Central Star Egg Mash	Central Hay & Grain Co.	4.00	21.00	9.00
Purity Egg Mash	Coast Trading Co.	4.15	19.00	5.50
Golden Rod Egg Mash	Crown Mills	5.00	18.00	8.00
Quality Egg Mash	Falls City Mill & F. Co.	5.02	18.80	8.95
Poultry Food Mash	F. J. Farley	7.36	22.13	9.33
Special Poultry Mash	F. J. Farley	3.90	16.00	10.00
F. J. F. Pullet Mash	F. J. Farley	4.50	15.20	10.00
Ferndale Mash Mix	Ferndale Feed & Gro. Co.	8.00	16.33	10.00
Mash Formula No. 1	Ford Grain Co.	4.00	15.00	8.00
Mash Formula No. 2	Ford Grain Co.	3.00	15.00	8.00
Egg Mash	Ford Grain Co.	5.00	15.00	10.00
Egg Producer	Fisher Fl. Mills Co.	5.00	19.00	7.00
Laymor	Fisher Fl. Mills Co.	5.00	20.00	7.50
Egg Mash	Galbraith & Co.	5.00	18.00	7.00
Supreme Mash	Garden City Feed Mill	4.98	20.00	9.40
A-1 Laying Mash	Globe Grain & Mill Co.	5.00	16.00	9.00
Gould's Laying Mash	Gould & Co.	5.47	18.50	7.45
Grange Egg Mash	Grange Warehouse Co.	5.00	....	6.00
Clover Leaf Balanced Ration	The Inland Seed Co.	3.00	10.00	10.00
Clover Leaf Forcing Feed	The Inland Seed Co.	2.00	9.00	5.00
A-1 Mash	Kenworthy Gr. & Mill Co.	4.50	18.00	7.00
Mash Food	Kenworthy Gr. & Mill Co.	4.10	14.00	9.90
A-1 Moulting Mash	Kenworthy Gr. & Mill Co.	5.50	16.50	7.50
Kerr's Egg Producer	Kerr-Gifford Co.	5.00	21.00	8.50
Kerr's Lo-Protein Egg Mash	Kerr-Gifford Co.	5.00	18.00	8.00
Ruby Comb Egg Mash	Lakin Milling Co.	3.95	19.80	8.75
Diamond L Egg Mash	Harry N. Leckenby, Inc.	5.00	21.00	7.00
Standard Egg Producer	Lehmann Bros.	6.00	15.00	8.00
Lilly's Egg Mash	The Chas. H. Lilly Co.	5.00	19.00	7.00
Lilly's Moulting Mash	The Chas. H. Lilly Co.	7.50	26.00	6.00
Lilly's Golden Egg Mash	The Chas. H. Lilly Co.	4.00	16.00	10.00
Egg Mash	Northern Flour Mills	4.00	17.00	10.00
Pafco High Protein Poultry Mash	Pacific Am. Fisheries	4.00	20.00	8.00
Peterson's Egg Mash	P. A. Peterson	5.00	18.00	7.00
Olympic Egg Builder	Portland Flour Mills Co.	4.50	19.00	9.00
Kaskade Egg Mash	Portland Flour Mills Co.	4.50	17.00	9.00
Rex Egg Producer	Portland Feed Mills Co.	5.50	18.50	8.00
Egg Mash	Poultry Feed Association	5.00	18.00	8.00
Breeders Mash	Poultry Feed Association	4.00	15.00	10.00
Pu-L-Up Egg Mash	Puyallup & Sumner F. G. C. Co.	6.55	18.99	9.62
Pu-L-Up Egg Mash	Puyallup Feed & Supply Co.	5.00	19.00	7.00
Silver Quill Egg Mash	Sears, Roebuck & Co.	5.00	20.00	8.00
Silver Quill Laying Mash	Sears, Roebuck & Co.	5.00	20.00	8.00
Kenwa Egg Mash	Shaffer & Colby	4.00	17.50	9.00
Gateway Poultry Food	Smith Feed Co.	4.77	15.50	6.22
South Park Egg Mash	South Park Grocery	5.00	17.00	10.00
Suregrow Dev. Mash	Sperry Flour Co.	4.00	17.00	7.00
Surelay Egg Mash	Sperry Flour Co.	4.00	20.00	8.00
Breeder's Mash	Sperry Flour Co.	4.00	17.00	6.00

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS—Continued.

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS Minimum Per Cent Crude Fat	GUARANTEED ANALYSIS Minimum Per Cent Crude Protein	GUARANTEED ANALYSIS Maximum Per Cent Crude Fiber
POULTRY FEEDS—Continued—				
X-tre Egg Mash	Sumner Grain & Mill. Co.	4.50	20.00	7.00
Tjossem's Egg Mash	R. P. Tjossem & Son	4.00	20.00	10.00
Tofley's Big Egg Mash	M. O. Tofley	3.00	17.00	10.00
O. K. Mash Food	Vollmer Clearwater Co.	4.00	14.50	10.00
Wash. Co-Op. Egg & P. Assn. Mash	Vollmer Clearwater Co.	4.09	14.07	9.90
Laying Mash	Washburn & Wilson Seed Co.	5.00	23.00	8.00
Laying Mash No. 7	Lehmann Bros.	4.00	17.00	9.00
W. C. P. A. Mash	Wash. Co-op. Egg & P. Assn.	4.09	14.07	9.90
W. C. P. A. Egg Mash	Wash. Co-op. Egg & P. Assn.	8.01	21.19	5.16
W. C. E. & P. A. Egg Mash	Wash. Co-op. Egg & P. Assn.	4.00	15.00	8.00
Wemco Poultry Mash	Wenatchee Milling Co.	4.00	17.00	9.00
Wemco Egg Mash	Wenatchee Milling Co.	4.00	18.00	10.00
Quality Egg Mash	Wenatchee Produce Co.	4.00	16.00	10.00
Quality Breeding Mash	Wenatchee Produce Co.	4.00	15.00	10.00
W. P. Egg Mash	Western Produce Co.	5.51	18.38	6.36
White's Mash	White Feed Co.	4.30	15.00	10.00
Yakima Poultry Mash	Yakima Milling Co.	7.20	21.88	7.52
Hen Food	Albers Bros. Milling Co.	2.00	8.00	7.00
Armour's Meat Meal	Armour & Co.	6.00	60.00	2.00
Armour's Meat Scrap	Armour & Co.	6.00	60.00	2.00
Armour's Blood Meal	Armour & Co.	....	80.00	2.00
Coffin's Meat Meal	Coffin Pac. & Prov. Co.	10.00	60.00	2.00
Coffin's Meat Scraps	Coffin Pac. & Prov. Co.	12.00	50.00	3.00
Meat Scrap	Galbraith & Co.	8.00	56.00	1.50
Meat Meal	Galbraith & Co.	2.00	65.00	1.50
Fish Meal	Galbraith & Co.	17.00	58.00	.50
Yorkshire Meat Meal	John Morrell & Co.	6.50	60.00	1.50
50% Meat & Bone Scraps	Mutual Rendering Co.	10.00	50.00	2.00
50% Poultry Meat	Mutual Rendering Co.	10.00	50.00	2.00
Pafco Fish Meal	Pacific American Fisheries	8.00	50.00	....
Olympic Meat Scraps	Portland Fl. Mill Co.	50.00	50.00	4.00
Meat Scraps	E. Rauh & Sons Animal F. Co.	6.00	40.00	4.00
Blood Meal	Swift & Co.	50.00	87.00	1.00
Eggmor Meat Meal	Swift & Co.	8.00	50.00	4.50
Eggmor Meat Scraps	Swift & Co.	8.00	50.00	4.00
Poultry Bone	Swift & Co.	5.00	25.00	1.50
Premier Scratch	Albers Bros. Milling Co.	3.00	11.00	3.00
Two-Grain Scratch	Assoc. Grange Warehouse	....	....	....
All Grain Scratch	Assoc. Grange Warehouse	....	....	....
Cypress All Grain Scratch	Anacortes Ice Co.	....	....	....
Mainstay Scratch	Bayview Mill. Co.	....	....	....
R. J. Blair Scratch	R. J. Blair	....	....	....
Scratch Feed	Boyd-Conlee Co.	....	....	....
Chick Scratch	Boyd-Conlee Co.	....	....	....
Scratch	Buckley Feed Mills	....	....	....
Elgin Scratch Food	City Grain & Seed Co.	....	....	....
Crescent Scratch	Crescent Mills	....	....	....
Golden Rod Scratch	Crown Mills	3.00	10.00	3.00
Dowdle's Scratch	Dowdle & Caldwell	....	....	....
Quality Scratch	Falls City Mill & Feed Co.	3.00	10.00	7.00
F. J. F. Scratch	F. J. Farley	....	....	....
Ferndale Scratch	Ferndale Feed & Gro. Co.	....	....	....
Scratch Food	Garden City Feed Mill	....	....	....
Clover Leaf Scratch	Inland Seed Co.	....	....	....
Kennewick Scratch	Kennewick Flour Mills	....	....	....
Kerr's Scratch Food	Kerr-Gifford Co.	2.50	9.50	5.00
Kerr's Dev. Scratch Food	Kerr-Gifford Co.	2.00	10.00	4.50
Albina Scratch Food	Kerr-Gifford Co.	2.50	9.00	5.00
Poultry Scratch Food	W. A. Keyes	....	....	....
Ruby Comb Scratch Food	Lakin Milling Co.	....	....	....
All Grain Feed	Harry N. Leckenby, Inc.	....	....	....
Diamond L Scratch	Harry N. Leckenby, Inc.	....	....	....
Scratch Food	Miller Flour Mills	4.00	15.00	7.00
Midlakes Scratch	Midlakes Feed & Mill. Co.	6.00	8.00	4.00
Midlakes Grow. Scratch	Midlakes Feed & Mill. Co.	5.00	10.00	4.00
Midlakes Chick Scratch	Midlakes Feed & Mill. Co.	3.00	9.00	5.00
Rubicomb Scratch	Nell Bros. Grain Co.	....	....	....
Scratch Feed	Northern Fl. Mills Co.	3.00	10.00	5.00

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS—Continued.

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS		
		Minimum Per Cent Crude Fat	Minimum Per Cent Crude Protein	Maximum Per Cent Crude Fiber
POULTRY FEEDS—Continued—				
Two & One Scratch	Northern Flour Mills Co.	2.50	9.00	5.00
Scratch Feed	Northern Flour Mills Co.	3.00	10.00	5.00
Scratch Developer	Northern Flour Mills Co.	3.00	10.00	4.00
Baby Chick Scratch	Northern Flour Mills Co.	2.50	10.00	3.00
All-Grain Scratch	Northern Flour Mills Co.	2.50	9.00	6.00
Pafco Scratch Food	Pacific American Fisheries	3.00	11.00	3.00
Peterson's Scratch Food	P. A. Peterson			
P. B. Super-Scratch	Peterson Bros. Grain & F. Co.			
Olympic Baby Scratch	Portland Fl. Mills Co.	2.50	9.50	5.00
Olympic Grow. Chick Scratch	Portland Fl. Mills Co.	2.50	9.50	5.00
Olympic Scratch Feed	Portland Fl. Mills Co.	2.50	9.50	5.00
Kaskade Scratch	Portland Fl. Mills Co.	2.50	9.50	5.00
Rex Baby Chick Scratch	Portland Feed Mills Co.	2.50	9.00	5.00
Rex Growing Scratch	Portland Feed Mills Co.	2.50	9.50	5.00
Teeka Scratch Feed	Prosser Flour Mills			
Pu-L-Up Scratch Feed	Puy. & Sumner F. G. Can. Co.	4.36	11.90	4.09
Royal Scratch Feed	Rudy-Patrick Seed Co.	2.50	10.00	3.00
Hammond's Best Scratch	Seattle Flour Mills	3.00	15.00	5.00
South Park Scratch	South Park Grocery			
Baby Chick Scratch	Sperry Flour Co.	2.00	12.00	4.00
Scratch Feed	Sperry Flour Co.	2.50	10.00	4.00
Growing Scratch Feed	Sperry Flour Co.	2.00	12.00	4.00
Developing Scratch	Sperry Flour Co.	2.00	12.00	3.00
Stretch's Scratch Satisfie	R. J. Stretch Co.			
Stevens' Scratch Feed	John B. Stevens & Co.			
Tjossem's Scratch Feed	R. P. Tjossem & Son			
Scratch Food	Tuttle Feed Co.	2.50	9.50	3.50
W. W. F. A. Scratch	Walla Walla Farm Agency			
Coyle's Chick Scratch	Walla Walla Mill Co.			
Coyle's Scratch Feed	Walla Walla Mill Co.			
Coyle's Dev. Scratch	Walla Walla Mill Co.			
Scratch Food	Wash. Co-op. Egg & P. Assn.			
W. P. Co. Scratch	Western Produce Co.			
White's Scratch	White Feed Co.			
Mainstay Special	Bayview Milling Co.			
Peterson's Development Feed	P. A. Peterson			
Suregrow (Dev. Mash)	Sperry Flour Co.	4.00	17.00	7.00
Chick Food	Washburn & Wilson Seed Co.	3.50	14.00	3.50
Chick Feed	Wash. Co-op. Egg & P. Assn.			
WHEAT BRAN—				
Wheat Bran 70s	Centennial Mill Co.	3.00	12.00	10.00
Wheat Bran	Collins Flour Mills	3.00	12.00	12.00
Wheat Bran	Crown Mills	3.00	12.00	10.00
Wheat Bran	Diamond Flour Mills	3.00	12.00	10.00
Wheat Bran	Ellensburg Milling Co.	3.25	13.00	12.00
Wheat Bran & Shorts	Ellensburg Milling Co.	3.25	14.00	10.00
Eureka Wheat Bran	Eureka Flour Mills	3.00	11.00	12.00
Wheat Bran	Fisher Flour Mills Co.	3.00	12.00	10.00
Wheat Bran	Kennewick Flour Mills	2.00	10.00	12.00
Wheat Bran	The Chas. H. Lilly Co.	3.00	12.00	10.00
Wheat Bran	Kalispell Flour Mills Co.	3.00	15.00	10.00
Wheat Bran	F. M. Martin Gr. & M. Co.	3.00	12.00	10.00
Wheat Bran	Miller Flour Mills	3.00	12.00	12.00
Wheat Bran (Montco)	Montana Flour Mills	4.00	15.60	12.00
Wheat Bran	Northern Flour Mills Co.	3.00	12.00	12.00
Wheat Bran	Pasco Flour Mills	2.00	12.00	10.00
Wheat Bran	The Peacock Mill Co.	3.00	12.00	12.00
Wheat Bran	Portland Flour Mills Co.	3.00	12.00	12.00
Wheat Bran	Preston-Shaffer Mill Co.	3.00	12.00	12.00
Wheat Bran	Prosser Flour Mills	4.51	14.00	11.10
Wheat Bran (Royal)	Royal Milling Co.	3.00	15.00	10.00
Hammond's Best W. B.	Seattle Flour Mills	3.00	12.00	12.00
Wheat Bran	Sprague Roller Mills	3.00	12.00	10.00
Wheat Bran	Superior Milling Co.	3.00	12.00	10.00
Wheat Bran (Tjossem's)	R. P. Tjossem & Son	2.50	12.00	14.00
Wheat Bran	Vollmer-Clearwater Co.	3.00	15.00	10.00

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS—Continued:

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS		
		Minimum Per Cent Crude Fat	Minimum Per Cent Crude Protein	Maximum Per Cent Crude Fiber
WHEAT BRAN—Continued—				
Wheat Bran	Wasco Warehouse Mill Co	3.00	12.00	10.00
Wheat Bran	Wash. Gr. & Milling Co	3.00	12.00	10.00
Wheat Bran	Wenatchee Milling Co	3.00	12.00	10.00
WHEAT MIDDLINGS—				
Wheat Middlings	Colton Flour Mills Co	3.00	14.00	7.00
Wheat Middlings	Crown Mills	3.00	14.00	7.00
Wheat Middlings	Diamond Flour Mills Co	3.00	11.00	7.00
Wheat Middlings	Fisher Flouring Mills Co	3.00	14.00	7.00
Kalispell Wheat Standard Middlings	Kalispell Flour Mill Co	4.00	16.50	7.50
Wheat Middlings	Kennewick Flour Mills	3.00	12.00	11.00
Wheat Middlings	Kerr-Gifford & Co., Inc	3.00	14.00	7.00
Wheat Middlings	The Chas. H. Lilly Co	3.00	14 00	7.00
Wheat Middlings	Mabton Milling Co	3.00	14.00	7.00
Wheat Middlings	F. M. Martin Gr. & M. Co	3.00	14.00	7.00
Wheat Middlings	Miller Flour Co	3.00	14.00	7.00
Wheat Middlings (Montco)	Montana Flour Mills Co	4.90	16.60	9.50
Wheat Middlings (Oregon)	Northern Flour Mills Co	3.00	13.50	7.50
Wheat Middlings (Wash.)	Northern Flour Mills Co	3.00	14.00	7.00
Wheat Middlings	Novelty Mill Co	3.00	14 00	7.00
Wheat Middlings	Pasco Flour Mills Co	2.50	12.00	8.00
Wheat Middlings	The Peacock Mill Co	3.00	14.00	7 00
Wheat Middlings	Portland Flour Mills Co	3.00	14.00	7.00
Wheat Middlings	Preston-Shaffer Mill Co	3.00	14.00	7.00
Wheat Middlings	Prosser Flour Mills	3.82	14.44	8.50
Wheat Middlings (Royal)	Royal Milling Co	4.00	16.50	7.50
Wheat Middlings (Alta)	Russell-Miller Mill Co	4.50	15.00	8.50
Hammond's Best Wheat Middlings	Seattle Flour Mills	3.00	14.00	7 00
Wheat Middlings	Sperry Flour Co	3.00	14.00	7.00
Wheat Middlings	Spokane Flour Mills	3.00	14.00	7.00
Wheat Middlings	Superior Milling Co	3.00	14.00	7.00
Wheat Middlings	Touchet Milling Co	4.56	16.62	5.85
Feed Middlings	Vollmer-Clearwater Co	4.00	15.00	10.00
Wheat Middlings	Wasco Warehouse Mill Co	3.00	14.00	7.00
WHEAT SHORTS—				
Wheat Shorts 80s	Centennial Mill Co	3.00	14.00	9.00
Wheat Shorts	Collins Flour Mills	3.00	14.00	9.00
Wheat Shorts	Crown Mills	3.00	14.00	9.00
Wheat Shorts	Diamond Flour Mills Co	3.00	14.00	9.00
Wheat Shorts	Ellensburg Milling Co	3.20	16.25	8.25
Wheat Shorts	Eureka Flour Mills	3.00	13.50	10.00
Wheat Shorts	Fisher Flouring Mills Co	3.00	14.00	9.00
Wheat Shorts	Kennewick Flour Mills	2.00	10.00	12.00
Wheat Shorts	The Chas. H. Lilly Co	3.00	14.00	9.00
Wheat Shorts	F. M. Martin Gr. & Mill. Co	3.00	14.00	9.00
Wheat Shorts	Miller Flour Mills	3.00	14.00	9.00
Wheat Shorts (Oregon)	Northern Flour Mills Co	3.00	13.50	8.50
Wheat Shorts (Wash.)	Northern Flour Mills Co	3.00	14.00	9.00
Wheat Shorts	Pasco Flour Mills Co	2.00	12.00	10.00
Wheat Shorts	The Peacock Mill Co	3.00	14.00	9.00
Wheat Shorts	Portland Flour. Mills Co	3.00	14.00	10.00
Wheat Shorts	Preston-Shaffer Mill. Co	3.00	14.00	9.00
Wheat Shorts	Prosser Flour Mills	5.25	15.69	7.19
Hammond's Best Wheat Shorts	Seattle Flour Mills	3.00	14.00	9.00
Wheat Shorts	Sprague Roller Mills	3.00	14.00	9.00
Wheat Shorts	Superior Milling Co	3.00	14.00	9.00
Wheat Shorts	R. P. Tjossem & Son	3.00	14.00	10.00
Wheat Shorts	Vollmer-Clearwater Co	4.00	17.00	7.00
Wheat Shorts	Wasco Warehouse Mill. Co	3.00	14.00	9.00
Wheat Shorts	Wash. Grain & Mill. Co	3.00	14 00	9.00
Wheat Shorts	Wenatchee Milling Co	3.00	14.00	10.00

REGISTERED CONCENTRATED COMMERCIAL FEEDING STUFFS—Continued.

FEED AND TRADE NAME	MANUFACTURER	GUARANTEED ANALYSIS		
		Minimum Per Cent Crude Fat	Minimum Per Cent Crude Protein	Maximum Per Cent Crude Fiber
MISCELLANEOUS—				
Atlas Hominy Feed	Atlas Cereal Co.................	6.50	9.00	7.00
Rabbit Feed	Fisher Flour. Mills Co..........	4.00	17.00	10.00
Fleischmann's Dried Grains .	The Fleischmann Co............	8.00	12.00	21.00
Humane Stock Food	Humane Stock Remedies Co...	3.00	15.00	10.00
Humane Poultry Powder (Food)	Humane Stock Remedies Co...	2.00	12.00	10.00
Shogo Corn Chop	Nebraska Corn Mills............	3.50	7.00	4.00
Nebco Hominy Feed	Nebraska Corn Mills............	7.00	11.00	6.50
Plymouth Hominy Feed	Plymouth Milling Co...........	8.50	10.00	6.35
Stock Food	Sperry Flour Co................	2.00	8.00	6.00
Careyized Stock Tonic	Swift & Co.....................	.89	....	....

DIVISION OF WEIGHTS AND MEASURES.

Honorable E. L. French,
Director of the Department of Agriculture.

Sir: I hereby submit a report of the work done by the state and the city departments of Weights and Measures for the year ending September 30, 1922.

BRIEF HISTORY.

The National Bureau of Standards was established in 1901, and in 1909 it was authorized to undertake investigation of the general conditions of the Weights and Measures in commercial use throughout the United States. Through this investigation deplorable conditions were discovered. Only two or three states and few of the larger cities maintained at that time any efficient inspection service, and negligence in this regard was costing the consuming public large sums of money, and putting a premium on dishonesty in competition. Shortages in weights and measures were found to be common conditions.

LOSS TO DEALER AND PURCHASER SERIOUS.

The Bureau's investigation showed that nearly 45 per cent of all the scales tested were 3 or more per cent in error. When the rapidity with which a tradesman sells his wares is considered, even 3 per cent is a very important consideration, and when it reaches 12, as it did in a number of cases, the loss to the purchaser is a serious one. The honest dealer as well as the purchaser, suffers from the existence of such a fraud, since the possessor of such a fraudulent scale can apparently undersell him and actually receive more for his goods.

STATE OF WASHINGTON ADOPTS REMEDIES.

Following out the plan of making a general investigation of conditions with reference to Weights and Measures, a representative of the government in due time made a visit to the State of Washington calling at the City of Spokane, which was the only city in the state at that time maintaining a Weights and Measures Department under City Ordinance. He later visited the City of Seattle and found conditions so bad that upon making a report of them to the press, the establishment of a Weights and Measures Department in the city under City Ordinance followed.

The benefits derived from the establishment of Weights and Measures Departments in these two cities were so apparent that it was found necessary to enact a Weights and Measures law for the entire state. In 1913, an act was passed making each county Auditor Sealer of Weights and Measures. Experience proved that its administration under county organization was not satisfactory, but it served to arouse, among the citizens of the state, such an interest both in Weights and Measures, and the devices for determining them, that the passage of a new act was urged upon the Legislature of 1913.

ORGANIZATION OF STATE DEPARTMENT.

Under this act there was created a State Department of Weights and Measures, of which the Secretary of State was made ex-officio Superintendent. He was authorized to appoint a deputy Superintendent and one Inspector, and also not to exceed twelve (12) local Inspectors, known as State Sealers. Pursuant to the provisions of the law, the State Department of Weights and Measures was organized early in 1917. For convenience, the state was divided into eight (8) districts, in the formation of which population, transportation and accessibility were considered, and a State Sealer assigned to each. These men were given a thorough course of training in the technical requirements of the work and a further instruction by the Superintendent or Inspector during their personal visits to the districts. Conferences are also held at which all members of the department compare experiences, discuss problems which arise in their work, and receive additional information from representatives of the Federal Bureau, who attend these meetings.

The placing of the Weights and Measures Department under the State Supervision proved to be a step in the right direction, as it placed the men under the directorship of one official instead of practically as many different advisors as there are counties in the state, which could not result in uniform inspection and changes of inspectors were too frequently made, due to the short term of office held by the County Auditor, to permit of an inspector to become fully trained in this important work.

TRANSFER OF THE DEPARTMENT.

In the year 1921, under the new State Administrative Code, the Weights and Measures Department was transferred to, and became a division of the Agricultural Department. The Director of Agriculture, under the Code, has the power to appoint an assistant director, to be known as the Supervisor of Weights and Measures, who shall have charge of Weights and Measures, and with the approval of the Director, have the power to appoint and deputize sealers and inspectors. While the work of the Weights and Measures Department has been greatly hampered, due to the lack of funds, it has managed, by co-operating with the Department of Highway Patrol and assisting in the enforcement of the Motor Vehicle Law, to keep three and four men in the field work besides the Supervisor. All of the fieldmen have been with the department for a number of years, and are thoroughly familiar with their duties, which has enabled them through diligent work, to make a very creditable showing. The placing of the Weights and Measures Department in the Agricultural Department has worked out admirably, and it has been able to co-operate with, and receive the co-operation of the other divisions of the Agricultural Department. This is especially true in working in connection with the Grain Inspection Service, which also under the Administrative Code, became a division of the Agricultural Department.

GRAIN SCALES.

Heretofore the grain scales at the terminal warehouses have been tested by the grain inspectors, who naturally were not trained in the inspection of scales, and were also greatly handicapped in the inspection of scales by not being furnished with the proper equipment for this work. The grain scales at the terminal warehouses have received special attention. The grain scales at the shipping points in Eastern Washington have been given all the attention possible with the limited number of fieldmen. In all of the grain industry the one dominant factor controlling the net profit of every transaction from harvest to consumer is weight. The farmer must be paid for all he raises. The elevator operator handles the grain—his profit is determined by his weights bought and his weights sold, and he therefore cannot afford to handicap his earnings by inaccurate weights. The department has had this in mind, and has made every effort possible through careful inspection, to maintain the accuracy of the grain scales throughout the state.

OTHER SCALES.

All other scales have received the careful attention of the fieldmen and this department has the full confidence and cooperation of the dealers as is evidenced by the numerous requests for inspection when the dealers become doubtful of the accuracy of their scales.

GASOLINE PUMPS.

The increased number of gasoline pumps installed throughout the state is astonishing, and thorough inspection must be maintained in order to insure accuracy in the delivery of gasoline. Not only the natural wear, but faulty installation may cause inaccuracy in the delivery. The inspector who is familiar with pumps can usually locate the trouble and advise the dealer how to repair it and in this way not only assist the dealer, but through his instructions cause the pump to be placed in condition to insure accuracy in the delivery of gasoline.

RE-WEIGHT CHECKING OF COMMODITIES.

This is a very important work of the department and only through the careful re-weight checking of commodities can the full true and correct net weight be insured to the consumer. The laws of this state require that all commodities bought or sold by weight or measure must be bought or sold upon the basis of their true net weight or measure. It is so convenient in weighing to include the sack or wrapping that in the individual case may mean little to the consumer, but in the aggregate, during a year's time, may amount to thousands of dollars to the manufacturer. There is no valid reason why the consumer should receive less in goods any more than money.

CITY WEIGHTS AND MEASURES DEPARTMENTS.

Most excellent work is being done by the Weights and Measures Departments of the cities of Seattle, Tacoma and Spokane, and this department has the hearty co-operation of these departments, which is absolutely necessary in order to make the work effective over the entire state.

Respectfully submitted,

W. B. NEWCOMB.

TOTAL COMMODITIES CHECKED FROM OCTOBER 1, 1920, TO SEPTEMBER 30, 1922.

COMMODITIES	Correct	Heavy	Light	Totals
Butter	7,279	197	899	8,375
Bread	3,223	273	419	3,915
Berries	7,882	....	750	8,632
Meat	161	....	10	171
Mill Products	3,005	147	924	4,076
Package Goods	3,384	40	271	3,695
Coal	....	2	1	3
Wood	26	2	16	44
Hay	1	....	1	2
Miscellaneous	1,200	29	109	1,338
Grand Totals	26,161	690	3,400	30,251

TOTAL SCALES INSPECTED FROM OCTOBER 1, 1920, TO SEPTEMBER 30, 1922.

SCALES	Approved	Adjusted	Con-demned	Con-fiscated	Totals
Wagon and Truck	859	56	78	3	996
Platform Dormant	1,690	156	77	....	1,923
Platform Portable	2,746	194	84	8	3,032
Overhead Beam	517	30	8	1	556
Computing	7,133	1,046	211	13	8,403
Counter and Even Balance	1,539	86	26	3	1,654
Spring Balance	363	12	30	43	448
Miscellaneous	334	36	70	3	443
Grand Totals	15,181	1,616	584	74	17,455

TOTAL AVOIRDUPOIS WEIGHTS INSPECTED FROM OCTOBER 1, 1920, TO SEPTEMBER 30, 1922.

WEIGHTS	Approved	Adjusted	Con-demned	Con-fiscated	Totals
Avoirdupois	25,060	108	63	54	25,285
Grand Totals	25,060	108	63	54	25,285

TOTAL CAPACITY MEASURES INSPECTED FROM OCTOBER 1, 1920, TO SEPTEMBER 30, 1922.

CAPACITY MEASURES	Approved	Adjusted	Con-demned	Con-fiscated	Totals
Liquid Measures	3,222	4	60	16	3,302
Measures Pumps	4,000	1,053	230	....	5,283
Grand Totals	7,222	1,057	290	16	8,585

TOTAL LINEAR MEASURES INSPECTED FROM OCTOBER 1, 1920, TO SEPTEMBER 30, 1922.

LINEAR MEASURES	Approved	Adjusted	Con-demned	Con-fiscated	Totals
Yard Sticks	....	....	1	....	1
Counter Measures	70	....	10	2	82
Grand Totals	70	....	11	2	83

SUMMARY OF TESTS MADE IN THE CITY OF SEATTLE OCTOBER 1, 1920, TO SEPTEMBER 30, 1922.

George F. Russell, Superintendent of Public Utilities; L. J. Allen, Chief Inspector Weights and Measures.

WEIGHING DEVICES	Approved	Adjusted	Condemn'd for Repairs	Confiscated	Totals
Scales	12,062	672	1,800	265	14,899
Avoirdupois Weights	16,112	16	....	46	16,174
Totals	28,174	688	1,800	311	31,073
CAPACITY MEASURES	2,781	232	236	606	3,855
Totals	2,781	232	236	606	3,855
LINEAR MEASURES	544	....	35	128	707
Totals	544	....	35	128	707
GRAND TOTALS	31,499	920	2,071	1,045	35,635

Number of arrests for violation of weights and measures law	75
Number of arrests for violation of city traffic ordinance	94
Rent cars examined	85
Drivers' examinations	1,105
Certified weights on commodities (pounds)	26,335,584

COMMODITIES CHECKED	Correct	Heavy	Light	Totals
Butter	3,784	78	817	4,679
Bread	2,874	83	526	3,483
Berries and Fruit	649	....	161	810
Meat	307	1	110	418
Package Goods	438	23	6	467
Coal	129	....	14	143
Wood	299	1	29	329
Hay	1	....	....	1
Miscellaneous	3,719	22	396	4,137
Totals	12,200	208	2,059	14,467

Meter tests	7
Gasoline tests	11
Thermometers tested	1
Speedometers tested	1
Gravel Trucks measured	11
Wood Wagons measured	422
Butter test	1
Cans tested	35
Bottles tested	25
Humidifiers tested	1
Tanks tested	35
Ice Cream Molds tested	6
Jelly Glasses tested	6
Sample tests	11
Complaints handled	39
Milk Bottles tested (car load)	1
Milk Bottles tested (correct)	9,220
Milk Bottles tested (confiscated)	6,330
Totals	16,163

We have also received reports of other persons being attacked, but the animals were killed before doing any damage.

Coyotes are slowly decreasing, especially in districts where it has been possible to keep salaried hunters at work; but the low prices being offered for the skins of bobcats and coyotes has caused a number of local trappers to discontinue trapping.

Many depredations by bear on the mountain sheep ranges have been called to our attention the past few months. The Vessey & Reaser Sheep Company, of Kennewick, report they lost over 300 sheep, valued at $10.00 each, in Pend Oreille County the past year. Other sheep companies report similar losses. When possible, we have sent hunters to the sections where the animals are doing the greatest damage. Mr. Howard Nye, a sheepman of Prosser, reports that one hunter, working upon his range for six weeks, saved him at least $1,000.00. Other stockmen and farmers report that where a salaried hunter has been working for a few months it is again possible for them to raise sheep at a profit, having previously been compelled to discontinue the work on account of coyotes.

Practically all the Western States are now cooperating with the Bureau of Biological Survey in the control of predatory animals, their appropriations varying from $20,000.00 to $100,000.00 each, bi-annum. The following states have discontinued the payment of bounties for the destruction of predatory animals, and have appropriated the funds formerly paid out in bounties for employing hunters on a monthly salary basis, through the State Agricultural Department in cooperation with the Federal Government: California, Wyoming, Utah, Nevada, Texas, Colorado, New Mexico and Arizona. Live stock organizations in other states are now demanding that the bounty system be discontinued and the funds formerly used for that purpose diverted to the employment of hunters on a salary basis. In addition to State and Federal funds for employing hunters, we are receiving cooperation from the State Supervisor of Game and Game Fish and various County Game Commissions.

MONTH	STATE FUNDS		FEDERAL FUNDS	
	Number of Men Employed	Salaries Paid	Number of Men Employed	Salaries Paid
1921—				
April	9	$998 00	10	$932 33
May	2	265 65	19	1,905 16
June	4	530 00	12	1,135 84
July	4	530 00	10	923 00
August	10	1,072 70	7	688 33
September	7	783 33	10	1,063 83
October	7	790 48	8	694 33
November	7	766 67	9	974 99
December	6	701 28	9	938 17
1922—				
January	7	797 41	8	684 34
February	7	810 89	6	456 67
March	8	836 93	13	1,149 89
April	....	....	27	2,227 32
May	....	....	45	3,921 05
June	....	....	47	4,542 42
July	10	1,022 73	22	1,900 50
August	14	1,575 49	12	1,141 66
September	18	1,944 16	5	519 80
Miscellaneous expenditures	....	230 45	....	5,624 82
Totals	120	$13,656 17	279	$31,423 45

Amount of State Fund	$17,000 00
Balance State Funds unexpended	3,343 83

The preceding tabulation does not include salaries of inspectors and office clerk, which were paid entirely from Federal funds. Additional clerical help, when needed, was paid with Washington State funds, and is included under Miscellaneous Expenditures.

The Pasteur treatment will prevent the development of the dreaded rabies, if the vaccine is given in sufficient time after the person or animal has been bitten. However, a greater preventative measure can be obtained by the elimination of the animals which are continually spreading the disease. Our work during the past few years has saved thousands of dollars for the livestock, poultry and wild game interests of the State of Washington and is well worthy of your support.

Very truly yours,
GLENN R. BACH,
Predatory Animal Inspector.

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